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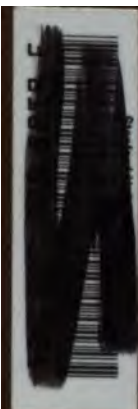
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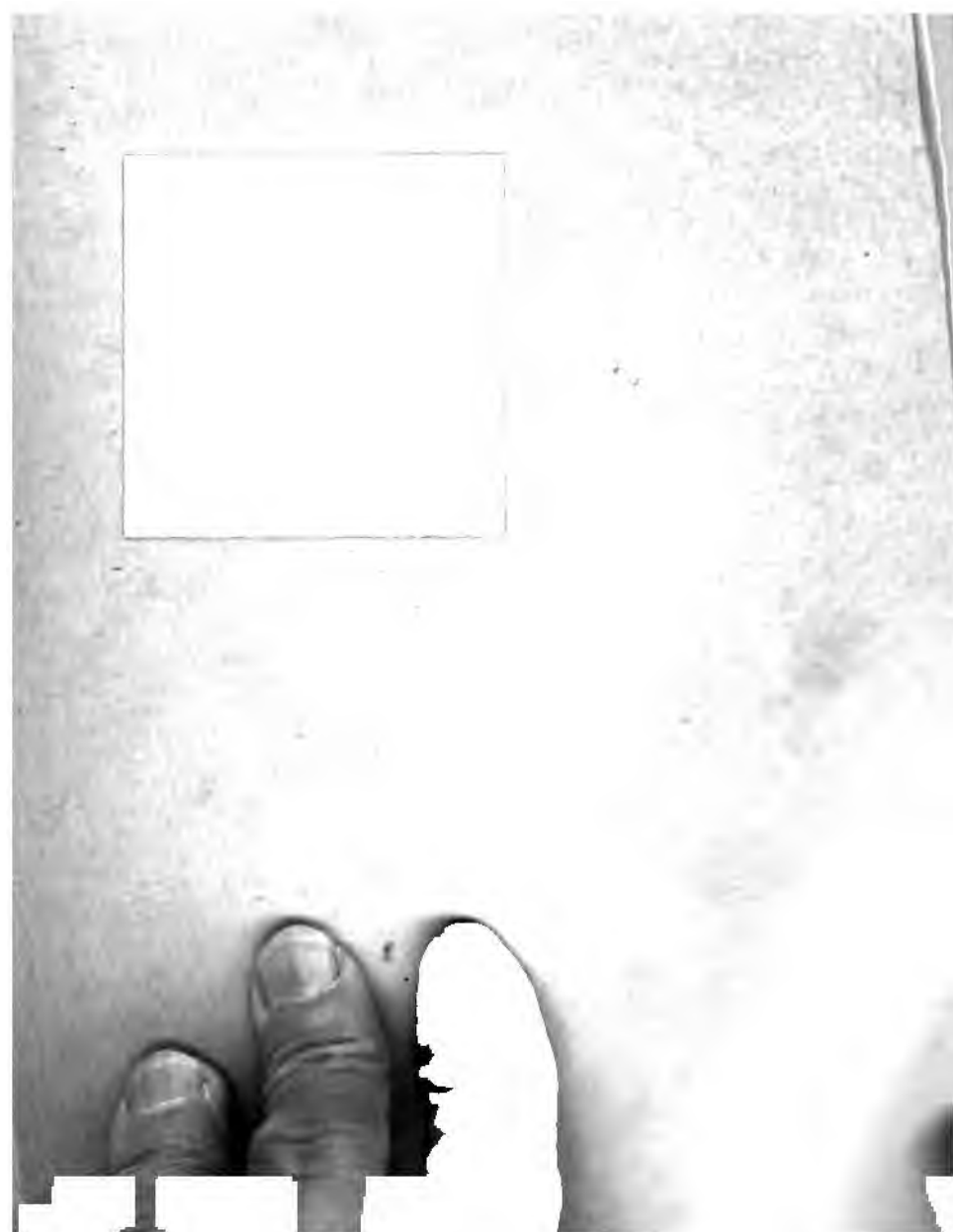


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DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY  
CHARLES D. WALCOTT, DIRECTOR

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THE  
TIN DEPOSITS OF THE YORK REGION, ALASKA

BY

ARTHUR J. COLLIER



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904

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## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., March 2, 1904.*

SIR: I have the honor to transmit herewith a report entitled "The Tin Deposits of the York Region, Alaska," by Mr. Arthur J. Collier, and to recommend its publication as a bulletin.

Placer tin was discovered in this region in 1900, and since that time active prospecting has been going on to determine the extent and distribution of the stream tin, and also to locate its source in bed rock. Though the occurrence of tin-bearing lodes had been previously reported, the first authentic discovery of this kind was made by Mr. Collier during the last season, and this find has awakened great interest in the district. The demand for authentic information regarding these occurrences has led to the preparation of this report, which is based on a very hasty field examination. The aim has been to summarize all the information in regard to the occurrence of tin which might be of value to the prospector, and for this reason a brief description of the better known tin deposits of the world has been included. The publication of the geologic results of these investigations is deferred until a more complete study of the notes and specimens has been made.

Very respectfully,

ALFRED H. BROOKS,  
*Geologist in Charge of Division Alaskan Mineral Resources.*

HON. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*









# THE TIN DEPOSITS OF THE YORK REGION, ALASKA.

By ARTHUR J. COLLIER.

## INTRODUCTION.

The known occurrences of tin in Alaska are close to the westernmost point of the American continent, in the York region of Seward Peninsula, the land mass which projects from the west coast of Alaska to within 60 miles of the coast of Asia. The peninsula as a whole has become famous in recent years on account of its gold placers, and every summer it is the objective point of a fleet of vessels loaded with prospectors following the ice pack in its northward retreat. The city of Nome, its most important mining camp, is the metropolis of Alaska. North of Seward Peninsula the Arctic Ocean stretches away toward the pole, while on the south Bering Sea, icebound for half the year, extends for 700 miles to the open water of the Pacific Ocean.

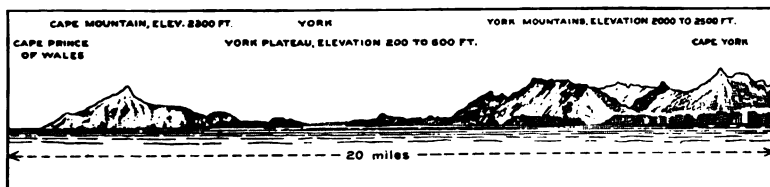


FIG. 1.—Sketch of the coast from Cape York to Cape Prince of Wales.

*Geographic position of the York region.*—The York region, which derives its name from Cape York, an ill-defined promontory on Bering Sea, about 100 miles northwest of Nome, comprises that portion of the peninsula west of the entrance to Port Clarence, thus including Cape Prince of Wales, the westernmost point of the American continent. Its general geographic position is shown in the outline map, Pl. I.

Reference to the topographic map, Pl. II, will show that the region has the general form of an isosceles triangle, with its apex at Cape Prince of Wales and its two sides formed by the shore lines of the Arctic Ocean and of Bering Sea. The southern coast line is, in the main, inhospitable and unbroken by inlets or harbors. The land usually presents abrupt escarpments rising from narrow rocky beaches and giving it a forbidding character, well shown by the sketch reproduced

in fig. 1. On the north the slopes toward the Arctic Ocean are more gentle, and the coast is characterized by barrier beaches that cut off broad lagoons from the open sea. Such a one is Lopp Lagoon, a large body of water that is unfortunately too shallow for any but light-draft boats. The large bay known as Port Clarence, 20 miles southeast of York, is the only good harbor in the region.

The York Mountains occupy the southeastern part of the triangle and culminate in Brooks Mountain, 2,900 feet in altitude, the highest point in this part of the peninsula. These mountains have rugged crest lines, their continuity being broken by several broad streams and river valleys, but when seen from a distance their summits have an even sky line from 2,000 to 2,900 feet above the sea. To the north and west of this mountain group stretches the so-called York Plateau, a comparatively smooth upland surface 200 to 600 feet above sea level that comprises the greater part of the region under discussion. The smaller streams crossing this plateau flow in sharply cut V-shaped canyons, while the larger streams occupy comparatively broad valleys containing large accumulations of gravel. On the south the plateau presents an escarpment to Bering Sea, but on the north it slopes gently downward to a coastal plain dotted with lakes, through which the rivers and streams meander to the Arctic Ocean.

The drainage of the region runs either northward or southward, but the watershed lies much nearer Bering Sea than the Arctic Ocean.

*History of recent exploration and development.*—The chief settlement of the region is York, a collection of cabins and tents on the open coast of Bering Sea at the mouth of Anikovik River, about 10 miles east of Cape Prince of Wales and 5 miles west of Cape York.

Previous to the discovery of gold at Cape Nome very little was known regarding the York region. A mission had been established for a number of years at Cape Prince of Wales, where one of the Government reindeer herds was maintained. After the first rush to Nome prospectors rapidly extended their search to all parts of the peninsula, and as early as the fall of 1899 some placer gold had been found in the Anikovik River Basin.<sup>a</sup>

In 1900, A. H. Brooks, of the United States Geological Survey, during his investigation of the southern part of the Seward Peninsula, spent several days in the York region and brought from the placers of Anikovik River and Buhner Creek, one of its tributaries, some concentrates, which proved to contain stream tin.<sup>b</sup>

In July, 1901, the writer spent a number of days in the York district,

<sup>a</sup>Schrader, F. C., and Brooks, A. H., Preliminary report on Cape Nome gold region, Alaska: Special report on Alaska, U. S. Geol. Survey, 1900, pp. 25-26.

<sup>b</sup>Brooks, A. H., An occurrence of stream tin in the York region, Alaska: Mineral Resources U. S. for 1900. U. S. Geol. Survey, 1901, pp. 267-271. A new occurrence of cassiterite in Alaska: Science, new ser., vol. 13, No. 328, 1901, p. 593. A reconnaissance of the Cape Nome and adjacent gold fields of Seward Peninsula, Alaska, in 1900; special report on Alaska, U. S. Geol. Survey, 1901, pp. 132-139.

before the news of the discovery had been disseminated among the miners, and it was possible only to verify the facts regarding tin ore reported by Mr. Brooks. A reconnaissance geologic map of the region was prepared and published in the report of the season's work, together with some suggestions in regard to the possible occurrence of tin ore.<sup>a</sup> In the latter part of the season, a great many prospectors searched the York region for tin, and before winter they had located promising deposits of stream tin on Buck Creek, a tributary of Mint River, about 20 miles north of the town of York.

In 1902 the search was continued and the first real attempts to mine the tin-bearing gravels were made on Buck Creek. The nature of this occurrence and the mining conditions which existed there at that time have been described by Mr. Rickard.<sup>b</sup>

In 1903 the writer was detailed to continue investigations of the mineral resources of the Seward Peninsula, and Mr. F. L. Hess was assigned to his party as field assistant. The party also included two experienced camp hands, and was equipped for traveling inland with a pack train of five animals. Nearly all the important placer mining camps of the peninsula were examined during the course of the work. Though a visit to the York region had not been contemplated, it was found upon arrival in the field that the interest in the tin deposits at York had not subsided, and that developments since 1901 justified further investigations, though there was little time available for this purpose. The party reached Teller in the latter part of July and there met a number of prospectors who had been searching for tin in the York region, and who desired to have their specimens examined, since they were unable to identify tin ore. Among these specimens only one piece of tin ore was found, but it had been obtained in a new locality and consisted of cassiterite crystals still in the matrix, indicating that its original source might easily be found.

On the following day Mr. Hess and the writer, accompanied by two prospectors, started from Teller in a small sailboat en route to the scene of the tin prospecting operations in the York region. During the following week Lost River, Buck Creek, and Cape Mountain were visited and the tin deposits at these places were examined. This work had to be done with such haste as to make the results in many respects unsatisfactory, since the work in other districts comprehended in the writer's instructions was sufficient to consume the whole season. The examination of the Lost River locality was made by Mr. Hess and the writer jointly, while Buck Creek was visited by Mr. Hess and Cape Mountain was visited by the writer.

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<sup>a</sup> Collier, A. J., Reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 49.

<sup>b</sup> Rickard, Edgar, Tin deposits of the York region, Alaska: Eng. and Min. Jour., vol. 75, 1903, pp. 30-31.

*Purpose of this bulletin.*—It is the purpose of this bulletin to combine the results obtained by the United States Geological Survey parties that have visited the region, together with the information derived from a study of specimens of tin ores and associated minerals recently brought from the York region by outside parties, and to present such facts in regard to the occurrences and value of the metal as may be of assistance to those interested in the development of the field. Throughout the field and office work the writer has had the efficient aid of Mr. Hess, who has devoted special attention to the compilation of the literature referring to tin deposits. The work of Mr. Eugene C. Sullivan, chemist of the Survey, who elaborated a method of analyses by which minute traces of tin could be detected, and who also made assays of the material from the York region, has added greatly to the value of the report.

### GENERAL GEOLOGY.

The geology of the York region, as has been shown, has been subject to investigations during the years 1900, 1901, and 1903, but all of this work was of a reconnaissance character, and the results have not yet been correlated with the latest work in other parts of the peninsula; hence it has been thought best to defer their publication for the present.

A sketch map (fig. 2) is here introduced to show the relative distribution of the more prominent rock types, without attempting, however, to subdivide them into formations or to indicate their stratigraphic and structural relations. In this map the horizontal distribution of four different rock types is indicated. These include slates and limestones, probably of Paleozoic age, and some granular intrusives, chiefly of a siliceous character. The slates and limestones form belts of irregular outline extending north and south, while the igneous rocks are found in intrusive stocks and dikes, the former outcropping in more or less circular areas. Besides these hard rocks, Pleistocene and Recent sands and gravels form the surface deposits of the northern coastal plain, and are also found in the valleys of many of the streams.

### SEDIMENTARY ROCKS.

It is seen in fig. 2 that the larger part of the area surrounding the York Mountains is occupied by limestone. This limestone has an ash-gray color and exhibits little evidence of metamorphism. It is characterized by low dips and comparatively simple structure. This formation has been called the Port Clarence limestone,<sup>a</sup> and has been definitely traced over an area of about 1,400 square miles, extending

<sup>a</sup> Collier, A. J., Reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 18.



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eastward from Cape York. The Port Clarence limestone is known to be of upper Silurian age, and it is safe to presume that a large part of the sedimentary rocks of the York region are also upper Silurian.

The continuity of this limestone is interrupted by several small

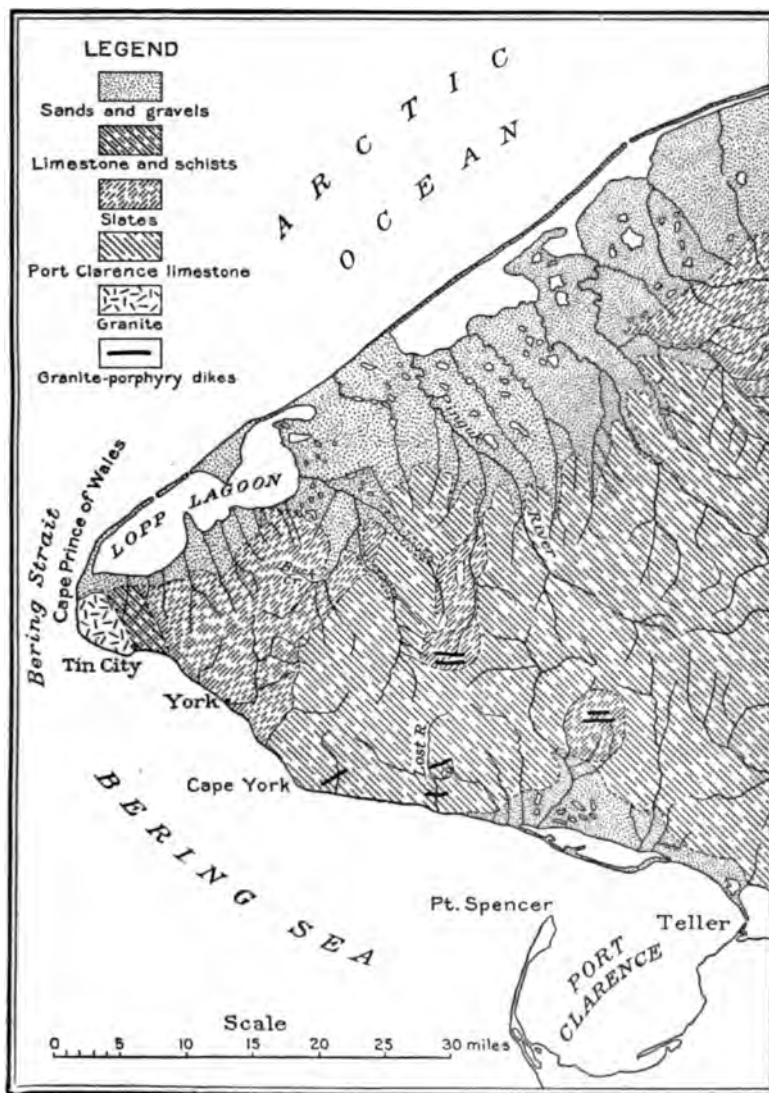


FIG. 2.—Geological sketch map of the York region.

slate areas of irregular outline, and a large belt of these rocks lies to the west of the York Mountains, forming the mass from which the greater part of the York Plateau is cut. These rocks, often so altered that they might more properly be called schists, are of a graphitic,

arenaceous, and sometimes calcareous character, and are of very fine texture. They are much jointed and broken by lines of cleavage into rhombohedral blocks and pencil-shaped fragments. The bedding is often obscured and sometimes obliterated by the highly developed joint structures. The age of these slates has not been determined. In 1900 they were correlated by Brooks<sup>a</sup> with the so-called Kuzitrin slates, which outcrop along the northern base of the Kigluaik Mountains. The work of the writer in 1901 pointed to the conclusion that they are older than the Port Clarence limestone, but this fact has not yet been definitely established. There is some indication of faulting along the contact of this slate belt and the limestones to the southeast.

West of the slates there is a narrow belt of highly altered limestone or marble more or less interbedded with micaceous schists. This belt, about 4 miles in width, lies between the slates on the east and a large mass of granite on the west, the latter forming the peak known as Cape Mountain. Some obscure fossils collected during the past season indicate that these limestones are either of Devonian or Carboniferous age. The stratigraphic relations of this limestone to the slates on the east have not been definitely determined.

#### SURFICIAL DEPOSITS.

The unconsolidated gravels and silts form the youngest group of sediments of the region. On the sketch map these deposits are shown mantling an area bordering the Arctic coast. This is the western end of a very extensive gravel deposit which covers the low Arctic coastal plain of Seward Peninsula from Cape Espenberg to Cape Prince of Wales.<sup>b</sup> These deposits extend to the base of the hills and in the valleys merge with the stream gravels with which they probably have common origin. In the southern part of the York region these surficial deposits are confined to the creek beds and narrow strips along the coast, and are usually too small to be shown on the map. All of these gravels are water-laid deposits, there being no evidence of glaciation. They form a part of the great Quaternary mantle that is so extensively developed in Seward Peninsula and adjacent portions of Alaska. The gravels, which are of economic interest because they locally contain concentrations of stream tin, will be described in another part of this paper.

<sup>a</sup> Brooks, A. H., Richardson, G. B., and Collier, A. J., A reconnaissance of the Cape Nome and adjacent gold fields of Seward Peninsula, Alaska, in 1900: Special report on Alaska, U. S. Geol. Survey, 1901, p. 133.

<sup>b</sup> Collier, A. J., Reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 25.

## IGNEOUS ROCKS.

Two distinct types of igneous rocks are present, one of which is basic while the other is acidic. The first group includes basic dikes and sills, all more or less altered and sometimes schistose, which may be grouped together under the general name of greenstones. The greenstones and greenstone-schists include a number of more or less altered intrusive masses, and occur most frequently in the slates near the contact with the limestone which forms the York Mountains. Boulders of this rock are widely distributed in the gravels of the region. Under the microscope they appear, for the most part, to be altered gabbros. They are often called granite by the miners, but can readily be distinguished from the true granite by a general green color and the absence of quartz. This distinction is of importance, for, so far as known, no tin deposits have been found in association with the greenstone.

The second group consists of more acid rocks and includes a number of large masses of granite together with dikes of a fine-grained, porphyritic rock containing prominent quartz crystals. These dikes often form a fringe surrounding the larger granite masses, of which they are probably offshoots. Granite masses of the same type occur in occasional outcrops from Cape Prince of Wales northeastward for over 100 miles, and form a zone which also finds a western extension in the Diomed Islands and possibly in the granites on the Siberian coast.

In the York region these rocks find their greatest development in Cape Mountain, where a great stock of granite is intruded into the limestone. The Cape Mountain granite is coarsely crystalline, somewhat porphyritic, and consists essentially of quartz, microcline, and biotite, but contains as accessory minerals, albite, muscovite, zircon, apatite, tourmaline, pyrite, and fluorite.

At Brooks Mountain, which is largely made up of slates, a number of dikes of granitic and rhyolitic rocks were observed, but these have not yet been studied microscopically. A few miles to the south, near Lost River, a number of granite and rhyolite intrusions in the limestone have been examined and will be described in some detail in connection with the Lost River tin deposits. The granites of this region, and especially those at Lost River, have been considerably altered and have taken various forms to which the name "greisen" has been applied because of their similarity to the vein rocks of the tin deposits of Cornwall and Saxony. The typical greisen of Saxony is a granite made up of quartz and lepidolite, or lithia mica, with fluorite, tourmaline, topaz, and cassiterite in small amounts.

The distribution of the granite intrusives is of the greatest economic importance, since many of the known lode deposits of tin occur in granite dikes. The prospectors of the region have readily recognized this and have made careful search along these contacts.

## ECONOMIC GEOLOGY.

### GENERAL STATEMENT.

Tin is known to be irregularly distributed in the York region over an area of about 450 square miles, embracing the western end of the peninsula. Its occurrence in alluvial deposits has been verified by the United States Geological Survey at three localities, and the existence of tin-bearing lodes has been observed at two points. The extreme points known are 25 miles apart. In addition to these, prospectors report the occurrence of tin at a great many other places, either in lode or placer form, and though it has not been possible to confirm these reports, there is reason to believe that they indicate a more extensive distribution of the tin ores. Many of the reported discoveries lie beyond the limits of the York region and indicate that the tin districts extend 100 miles or more to the northeast.

The tin ore is almost all cassiterite (tin oxide), though some stannite (sulphide of tin, copper, and iron) has been found. In the bed rock two essentially different types of deposits are represented. The ore occurs in veins cutting phyllites or metamorphic slates, and is disseminated through more or less altered granitic dikes. The lode deposits of the latter type give promise of commercial importance. Lode deposits of the former type have not been discovered in place, but the occurrence of tin-bearing quartz veins in slates is inferred from the distribution of the placer tin and from pebbles of slate containing small tin-bearing quartz veins, which have been observed in the gravels. It should be noted that no granite has been found in the slate area, and there is no positive evidence that the tin there has any genetic relation to granite intrusives.

No discussion of the genesis of these various ore bodies will be presented in this report, since the fieldwork has all been of a reconnaissance character. From a comparison of the evidence at hand with the facts known with regard to the older tin-bearing districts, it seems to be at least possible that the tin lodes of both types are connected with intrusive granite bodies, some of which have been exposed by erosion, while others are still deeply buried. These granites, which probably were all intruded at about the same time, mark a zone of plutonic activity extending from the Diomed Islands northeastward, parallel with the Arctic coast, for 100 miles or more. The localities from which tin ore has actually been obtained by United States Geological Survey parties and which have been examined in some detail will be described under the headings "Lost River," "Cape Mountain," "Buck Creek," "Buhner Creek," and "Anikovik River." The streams from which placer tin is reported by prospectors will be mentioned under the heading "Reported occurrences of stream tin," and

the localities from which prospectors have reported "ledge tin" will be described under the headings "Brooks Mountain," "Ear Mountain," "Hot Springs," "Asses Ears," and two other localities worthy of investigation will be mentioned under the headings "Diomed Islands" and "Don River."

#### LOCALITIES WHERE LODE TIN HAS BEEN FOUND.

##### LOST RIVER.

Lost River enters Bering Sea at a point about 15 miles southeast of York, 25 miles west of Teller, a town on Port Clarence, and 10 miles northwest of Point Spencer, at the entrance to Port Clarence. A view of the valley of this river, taken from the coast, is shown on Pl. III. The river has a length of about 10 miles and drains the central part of the York Mountains. The mountains constitute a nearly circular area of rugged land forms, about 15 miles in diameter. The summits rise to a general level of about 2,500 feet, and, as noted, reach a culmination of 2,900 feet in Brooks Mountain, near the north side of the area, which is the highest point in the northern part of Seward Peninsula. Along the southern edge of this mountain mass there is a well-defined bench from one-half mile to 4 miles wide. This bench was cut from the rocks by wave action and then raised, but so unequally that at the mouth of Lost River it has an elevation of 600 feet, while eastward it gradually declines until at Port Clarence it is practically at sea level.

The writer has referred to this feature in a previous paper as the Cape York bench.<sup>a</sup> It was produced during the same period of erosion as the York Plateau.

On the seaward side the Cape York bench is bounded by steep bluffs, which at places front directly on Bering Sea (see fig. 1) and at other points rise from a lower and younger bench nearly at sea level. This lower and newer plane is well developed from the mouth of Lost River eastward to Port Clarence, and has a width varying from one-half mile to 3 or 4 miles. It is, in part, a rock bench similar to the Cape York bench, and, in part, a gravel-built coastal plane. Immediately north of Port Clarence the lower coastal plane is fringed by a wide lagoon, cut off from Port Clarence by a sand spit.

The York Mountains are generally devoid of the tundra vegetation which covers so much of the Seward Peninsula; and along Lost River, from the coast to the tin deposits, can be found an exceptionally good roadbed for this part of Alaska. For one traveling on foot it is as firm as an ordinary macadamized road, and owing to the ease with which the trip up the river is made the distances are likely to be underestimated by persons who have traveled in other parts of Seward

<sup>a</sup> Collier, A. J.. A reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 37.



Peninsula. Lost River forks about  $1\frac{1}{2}$  miles from the coast, one branch continuing in a nearly due north direction, while the other drains a country to the west that has not been examined by geologists.

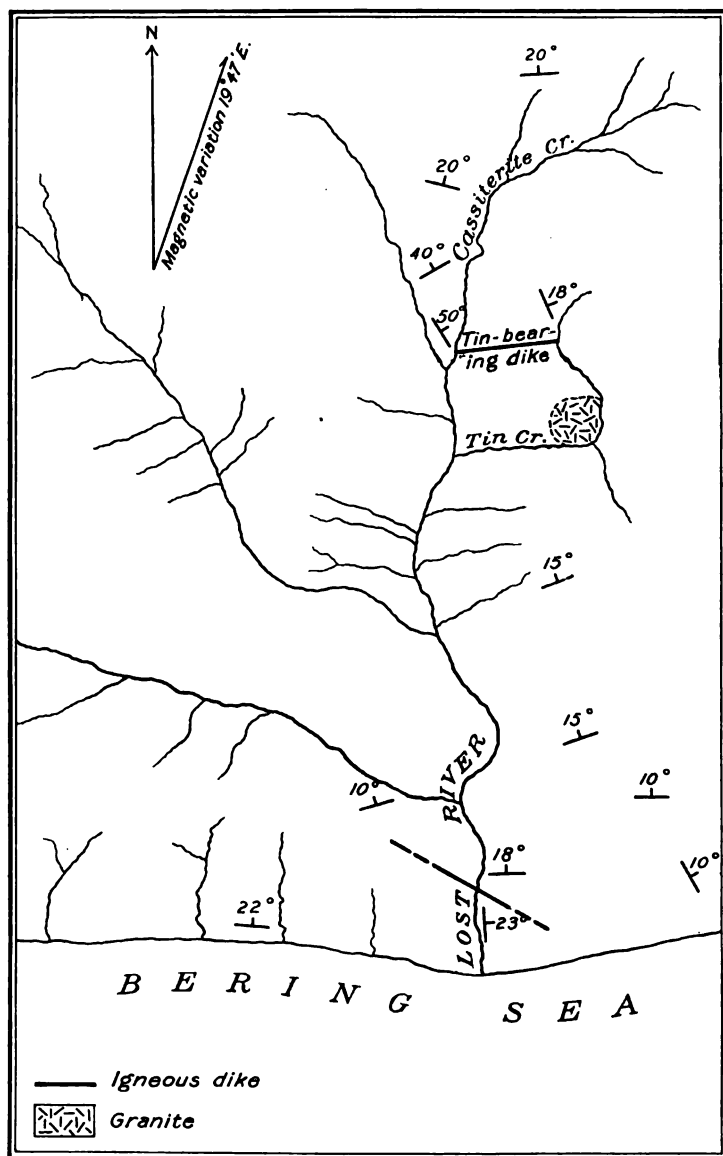


FIG. 3.—Sketch map of Lost River. Scale,  $\frac{1}{2}$  inch=1 mile.

About  $\frac{1}{2}$  miles from the coast the north fork of Lost River divides. The eastern branch is Cassiterite Creek; the western, which is somewhat larger, rises about 3 miles to the north, in the slopes of Brooks Mountain.

The Lost River tin deposits are located on the east side of the north fork of Lost River. (See fig. 3.) The ore has been found on Cassiterite Creek and on another eastern tributary, known as Tin Creek, which enters Lost River about a mile below the mouth of Cassiterite Creek. The latter stream has a length of about 3 miles; its head is within 1 mile of Cassiterite Creek, and after flowing parallel with Cassiterite Creek for about 1 mile it turns westward and enters Lost River from a deep canyon cut in the limestone of the York Mountains. At its mouth Cassiterite Creek is about 100 feet above the sea. In the latter part of July, 1903, Lost River carried approximately 1,000 miner's inches of water.

The York Mountains, in which the Lost River Basin lies, are composed almost wholly of ash-gray limestone of Silurian age, the Port Clarence limestone. Along Lost River the limestone shows little general metamorphism, and as a rule dips at low angles. From the coast to Tin Creek the strata generally dip to the north, and unless there are faults, which were not detected, a thickness of over 5,000 feet of limestone must be exposed. Near the mouth of Lost River a section of these limestones lying nearly horizontal is exposed in a mountain, called by prospectors Saddleback, which has an elevation of more than 2,000 feet above sea level. Dikes of igneous rock cut this limestone at several places along Lost River, and a number of these were readily traced across the limestone by a growth of moss and other vegetation which formed over them, the limestone itself being utterly devoid of vegetation. Microscopic examination shows that these dikes are of rhyolitic nature.

On Tin Creek, which enters Lost River from the east about  $4\frac{1}{2}$  miles from the coast, a large body of granite was found intruded in the limestone. This granite outcrop is believed to be nearly circular in outline and probably one-half mile in diameter. Around its margin the limestone was found to be considerably altered, and some small dikes of fine-grained pegmatite, probably apophyses from the main mass, were found cutting the limestone, apparently parallel with the contact of the limestone and granite.

Under the microscope the granite from the main mass is found to consist essentially of quartz, biotite, hornblende, orthoclase and acidic plagioclase feldspars with fluor spar, either accessory or secondary, and a few small grains of a mineral resembling zircon and believed to be cassiterite. Apparently the rock has been slightly crushed or sheared, producing streaks of fine-grained fragmental material of the same character as the original grains.

In Tin Creek, which flows for some distance along this contact, many boulders and pebbles, some of considerable size, were found to contain minerals, which are the result of contact metamorphism.

The main tin-bearing ledge outcrops nearly half a mile north of this

granite boss. It is a white, porphyritic dike, cutting the Port Clarence limestone, and striking nearly east and west. It has been traced from Tin Creek westward across the mountain to Cassiterite Creek, a distance of about 1 mile, but has not been found beyond these streams in either direction. All of this rock has been more or less altered, so that it is practically a greisen having crystals of cassiterite disseminated through it. Specimens collected near Tin Creek appear, in the hand specimen, to be a white aplite or porphyry with some small spots and large patches of purple. Under the microscope many of the original minerals are seen to have been replaced by fluorite, to which the purple color is due. Pseudomorphs of fluorite take the place of most of the feldspar crystals and of some of the quartz grains. (See Pl. V.) In specimens which are still more altered, collected from the same dike, near Cassiterite Creek, probably very few of the original minerals remain. The rock here is found to consist of calcite, fluorite, lithia mica, and quartz, proportioned in the order named. The limestone, on the south side of the dike, is altered for several hundred feet, and contains many greenish minerals, among which epidote and garnet have been identified. The limestones north of this dike are reported to contain many small stringers of tin ore for several hundred feet. The ore obtained from the main ledge varies considerably in general appearance and character. Some of the weathered ore from the croppings is highly siliceous, and has the appearance of weathered, iron-stained vein quartz with small black cassiterite crystals disseminated through it, while other specimens show clearly their granitic origin and contain comparatively little vein quartz. In the ore of the latter type the cassiterite occurs both as disseminated crystals varying in size from that of a pin head to that of a walnut and as veinlets and irregular masses. (See Pl. VII, B.) The granitic ore consists principally of calcite, fluorite, quartz, and large crystals of lithia mica; and in addition to the cassiterite, tourmaline, topaz, pyrite, garnet, and galena were observed in small amounts. Quantitative analyses of the lithia mica present made by W. T. Schaller, of the United States Geological Survey, show that it has the composition of zinnwaldite. In the float of this dike large specimens of galena, wolframite, and some malachite were collected, and in the altered limestone near the contact some large specimens of garnet were obtained. The siliceous ore mentioned above, when examined with the hand lens, sometimes showed spangles of free gold. A sample of this ore assayed<sup>a</sup> for gold and silver gave 0.36 ounce of gold per ton and a trace of silver. The piece assayed was a picked specimen, and not a commercial sample. Assays made for other parties are reported to show smaller amounts of gold in all cases. The occurrence of so much gold associated with the cassiterite seems to be unusual in tin ores, and merits further investigation.

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<sup>a</sup> Assay by E. E. Burlingame & Co., Denver, Colo.



VALLEY OF LOST RIVER, FROM THE COAST.



Among the loose material from the croppings of the ledge a large piece of galena coated with yellowish alteration products was found. This may have come either from the ledge or from the altered limestone near the contact. An assay shows that it contains 0.08 ounce of gold and 7.76 ounces of silver per ton. Both on Tin Creek and on Cassiterite Creek tin ore in angular, unworn crystals is reported to have been found in the gravels of the stream beds. One specimen of placer tin of this kind obtained near the cropping of the large dike on Cassiterite Creek consists principally of crystals of cassiterite, but contains also wolframite and garnet.

The tin-bearing dike is readily followed from Cassiterite Creek eastward over a mountain having an elevation of about 1,000 feet to Tin Creek, a distance of about 1 mile. At the time the ledge was examined, in the latter part of July, 1903, no excavation had been made on it, and it was impossible to measure the exact width at any point, but surface débris indicated a width of about 100 feet. Since that time crosscut trenches have been made on the ledge near Cassiterite Creek, and the above estimate is reported to represent the facts.<sup>a</sup> The cassiterite was found to be distributed through the whole width of the dike.

No attempt will be made to give an estimate of the value of the deposit. The development on the ledge has not, as yet, gone far enough to allow systematic sampling, and until further excavations have been made the grade of the ore and the size of the deposit can not be determined. Picked specimens showing as high as 17 per cent metallic tin have been assayed, and still higher assays could be obtained by careful sorting. From the tests thus far made an average of 6 per cent for the whole width of the ledge is claimed.

The following assays of ore collected on this lode by Governor Hutchinson were made by Ledoux & Co., of New York:

*Assay of tin ore from Lost River.*

	Per cent tin.
Sample of ore marked "Dyke" .....	5.08
Sample of ore marked "Float" .....	15.70
Sample of ore marked "Greisen" .....	4.13

A partial analysis of one sample of the ore is as follows (No. 7451):

*Partial analysis of tin ore from Lost River.*

	Per cent.
Gold and silver .....	None.
Lead oxide (lead, 0.028 per cent) .....	0.030
Copper oxide (copper, 0.085 per cent) .....	.106
Arsenic oxide (arsenic, 0.38 per cent) .....	.580
Tin oxide (tin, 4.46 per cent) .....	5.74

<sup>a</sup> For information regarding developments subsequent to July 31, 1903, the writer is indebted to Gov. J. H. Hutchinson, a mine operator, who bonded several of the claims here in September, 1903. The facts as given by him are corroborated by others who have visited the locality.

	Per cent.
Manganous oxide (manganese, 0.424 per cent) .....	.548
Zinc oxide (zinc, 0.257 per cent) .....	.320
Nickel and cobalt oxides .....	Traces.
Silica .....	28.52
Alumina .....	33.55
Ferric oxide .....	8.31
Lime .....	6.75
Magnesia .....	.25
Lithium oxide .....	.09
Potassium oxide .....	.91
Sodium oxide .....	.36
Water, carbonic acid, etc .....	6.48
Sulphuric oxide (sulphur, 0.04 per cent) .....	.10

The alumina, etc., may contain titanitic acid. The magnesia and alkalis require confirmatory determinations.

Tin ore in the form of stannite or tin pyrites has been found on Tin Creek at the upper contact of the large granite area which has been described, and about half a mile below the cassiterite ledge. Specimens of mineralized granite were collected at this place, which, on examination in the laboratory of the Survey, are found to contain a small amount of tin in the form of stannite, together with other sulphide minerals. A sample of this ore assayed by Mr. E. C. Sullivan contained 0.3 per cent tin. Mineralized granite of this character appears to cover a considerable area, but the ore is probably of little value, except as showing the distribution of tin through the granites of the region.

In 1898 a party of disappointed prospectors, returning from Kotzebue Sound, were shipwrecked a few miles east of the mouth of Lost River, and were obliged to camp at that point during the winter. A cabin built largely from wreckage of their schooner is still standing, and is known as the Kotzebue cabin. These prospectors probably first applied the name Lost River to this stream.

In the succeeding summer a mining district was organized by survivors of this expedition, with headquarters located on King River, which enters Bering Sea between Lost River and Cape York. The Lost River region was included at that time in the King River recording district. No discoveries of gold were made, however, and the region was abandoned by prospectors. In 1901 the writer, in company with Mr. D. C. Witherspoon, topographer, of the Geological Survey, made a hasty examination of Lost River, but did not discover any indications of tin ore.

In the winter of 1902 prospectors again turned their attention to this region in the search for tin ore. Granite-porphry dikes, which occur in the limestones near the mouth of Lost River and also near King River, first attracted their attention, and many specimens of this material containing dark colored or smoky quartz phenocrysts, which



CAPE MOUNTAIN, FROM YORK.





were mistaken for "tin crystals," were sent to various assayers, from whom widely divergent reports were obtained.

Early in the summer of 1903 Charles Randt, Leslie Crim, and W. J. O'Brien discovered the interesting minerals above referred to in float boulders in Tin Creek, a tributary of Lost River, and made a thorough search for tin ore in that vicinity. They made a large collection of minerals, which was referred to the writer when he arrived in Teller in July, 1903. Metallic tin was readily obtained from one small specimen by aid of a blowpipe, while the larger part of the collection<sup>a</sup> was shown to contain minerals of no value. The collection was of sufficient interest to tempt the writer to examine the locality in detail. Mr. Hess and the writer proceeded to Lost River and were there able to trace the tin ore which had been seen in Teller to the granitic dike on Cassiterite Creek, and also to obtain specimens of stannite ore from Tin Creek.

Since this examination the dike described has been called "Cassiterite ledge" in location notices, and it has been definitely traced through a group of four claims. A crosscut trench has been made near the Cassiterite Creek end of the ledge, which, it is reported, shows that the ledge has a width of 100 feet and that cassiterite is disseminated throughout the rock. It is also reported that other discoveries of tin-bearing ledges in this neighborhood have been made since July, 1903. The claims located on Cassiterite ledge have been purchased by an experienced mine operator and will be developed next summer.

#### CAPE MOUNTAIN.

Cape Prince of Wales, the most western point of Seward Peninsula, is marked by a high peak known as Cape Mountain. At the southeast base of this mountain a settlement called Tin City has grown up within the last year. The Eskimo village of Kingegan, the Congregational Mission, and Wales post-office are located on the north side, facing Bering Strait. From the summit of the mountain East Cape and other points on the Asiatic coast, only 60 miles distant, are plainly visible on clear days. On its west and south sides this mountain slopes down to bluffs that drop perpendicularly into the sea. On its southeast side, near Tin City, the coast recedes northward, making a bight, which affords some protection from west winds, but for the prevailing south winds of summer it is practically an open roadstead with landing facilities, little, if any, better than those at Nome or York. The nearest good anchorage is about 40 miles distant, on Port Clarence, from which there are several practicable railroad routes. A view of this mountain as seen from York, about 12 miles distant, is shown in Pl. IV.

<sup>a</sup>A chemical analysis of one of these samples made by Mr. E. C. Sullivan, of the United States Geological Survey, shows no trace of tin. This sample consists mainly of tourmaline.

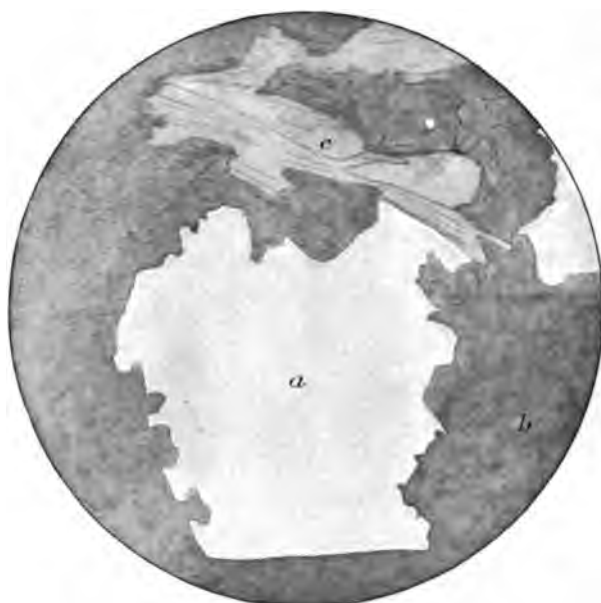
The greater part of the York region is occupied by the York Plateau, which is from 200 to 600 feet above the sea and is a result of erosion occurring during the period in which was produced the bench described in connection with the Lost River deposits.<sup>a</sup>

This plateau is trenched by the streams which drain the region, and the valleys have V-shaped cross sections, characteristic of newly established drainage. At the base of Cape Mountain, which rises to an elevation of 2,300 feet, the York Plateau has an elevation of about 300 feet above the sea. The interbedded schists and limestones above described form the bed rock of the plateau surface surrounding Cape Mountain, but the mountain itself is composed almost entirely of a granite boss intrusive in the limestone. The contact relations of the granite and limestone have not been studied in detail, but from data gathered in the hasty reconnaissances it appears that the granite cuts across the bedding of the limestone. This granite has already been described under the heading "Igneous rocks."

The writer's visit to this locality was of necessity a very hasty one, and work was hampered by exceedingly rainy weather, so that his observations were limited. Specimens of tin ore, however, were obtained from surface débris, which undoubtedly came from the granite of the mountain, though the ore was not definitely traced to its position in the solid rock. It is reported that tin ore has been found in at least three distinct places on this mountain, and that it occurs in somewhat irregular deposits which have an east-west trend. Several short tunnels have been driven into the mountain, but are reported not to have reached any ore bodies. The granite from some of these tunnels is partially altered to greisen and justifies the belief that the ore bodies may be not far distant. A sample of this granite, analyzed by Mr. Sullivan, of the Survey, was found to contain a few hundredths of 1 per cent tin.

The ore obtained at Cape Mountain differs in general appearance from that seen at Lost River. Large pieces of nearly pure cassiterite, one of which weighed fully 9 pounds, are said to have been found on the surface of the mountain. A specimen which the writer obtained weighs approximately 2 pounds and is nearly pure cassiterite, showing few crystal faces, but embedded in it and surrounding it are long, slender needles of tourmaline. While in this vicinity the writer saw a number of large, nearly colorless crystals of cassiterite which were practically transparent. Near the end of the season a large amount of supposed tin ore was collected on the flanks of Cape Mountain and shipped to Seattle, where it was examined by the writer and from it samples were selected for study in the laboratory. This supposed ore contains very little tin, but several dark crystalline minerals which

<sup>a</sup> Collier, A. J., A reconnaissance of the northwestern portion of Seward Peninsula, Alaska: *Prof. Paper U. S. Geol. Survey No. 2*, 1902, pp. 36-39.

**A****B**

## THIN SECTIONS OF ALTERED PORPHYRITIC DIKE NEAR TIN CREEK.

- A.** Magnified 80 diameters: *a*, feldspar; *b*, fluorite; *c*, fine-grained sericitic minerals; *d*, groundmass of fine-grained quartz, fluorite, sericite, and calcite.
- B.** Magnified 54 diameters: *a*, quartz phenocryst; *b*, groundmass, consisting mainly of fluorite and secondary quartz; *c*, zinnwaldite mica.



have been mistaken for cassiterite. A sample assayed for tin by Mr. Sullivan, of the Survey, contained a trace of tin, a few hundredths of 1 per cent. The principal constituent is tourmaline, in slender black or brown needles, and wolframite or scheelite are probably present, if, as reported, a considerable amount of tungsten was found.

Tin ore was discovered on Cape Mountain in July, 1902, by Mr. W. C. J. Bartels. In the fall of 1902 he brought out a large collection of specimens, which on examination by chemists and assayers, was found to include some tin ore. Extensive developments were planned for the season of 1903, and a well-equipped prospecting plant was sent to Cape Mountain. A large dynamo driven by a gasoline engine was to be placed near the beach at the point now known as Tin City, and from this dynamo wires to several points on the mountain were to supply power for electric drills. By the use of these drills it was expected that tunnels could readily be extended into the heart of the mountain and crosscut the ledges from which has come the float ore.

After spending nearly the whole of the season of 1903 in getting the machinery in place and establishing the winter camp it was found that the engine for driving the dynamo was defective, and the plan for development work during the winter of 1903-4 was necessarily suspended.

No work is now in progress on Cape Mountain, so far as is known, and very little advance has been made in revealing the nature of the ore deposits since the float ore was first discovered. This work, however, will undoubtedly be resumed in the summer of 1904, and it is to be expected that by the end of that season more definite information will have been obtained.

#### LOCALITIES FROM WHICH LODE TIN HAS BEEN REPORTED.

The discovery of tin ore in ledges has been reported by prospectors from many other localities in Seward Peninsula, some of which deserve notice, since the geologic conditions are known to be promising, and they will be described in some detail.

#### DIOMEDE ISLANDS.

These islands, which lie in Bering Strait, midway between Alaska and Siberia, are reported to be composed of granite, though they have not been examined by geologists. It is probable that they represent an intrusion similar to that at Cape Mountain. It is reported that copper ore has been found on them, and should the tin ore found on Cape Mountain develop commercial importance they may merit investigation.

## BROOKS MOUNTAIN.

This mountain lies about 11 miles north of the mouth of Lost River. The locality can easily be reached by a road up Lost River from the beach, or by a road following up Don River from Port Clarence. Wagons have been driven over both these routes. By the latter route the mountain is probably 20 miles from deep water of Port Clarence. The bed rock exposed on the mountain consists of highly altered limestones, and black slates which resemble the slates near York.<sup>a</sup>

The sedimentary rocks are cut by a number of granite and rhyolite dikes, which are believed to strike approximately east and west. All of the streams which head in Brooks Mountain, namely Lost River, Don River, York River, and Mint River, carry granite boulders that have been derived from the mountain.

In 1901 the writer observed in this vicinity some of the minerals that have been found associated with tin in the ledges seen within the past season, and in the winter of 1901 a prospector, who had spent considerable time in this same region, sent a collection of these minerals to the Geological Survey Office. This collection contains a great deal of tourmaline and garnet, both of which are associated with tin ore on Tin and Cassiterite creeks, about 4 miles south of Brooks Mountain. This locality seems promising for the occurrence of tin-bearing veins, though so far as is known to the writer no tin ore has yet been identified.

## DON RIVER.

On the west side of Don River there is a ridge of high hills composed, in part, of slates like those found near York.<sup>b</sup>

These slates are cut by intrusive dikes of quartz-porphry and granite resembling the intrusives of Brooks Mountain and Lost River. Some of the minerals often associated with tin ore have been found here, and the region is worthy of some investigation. This region lies about 10 miles east of Lost River and 9 miles north of Port Clarence.

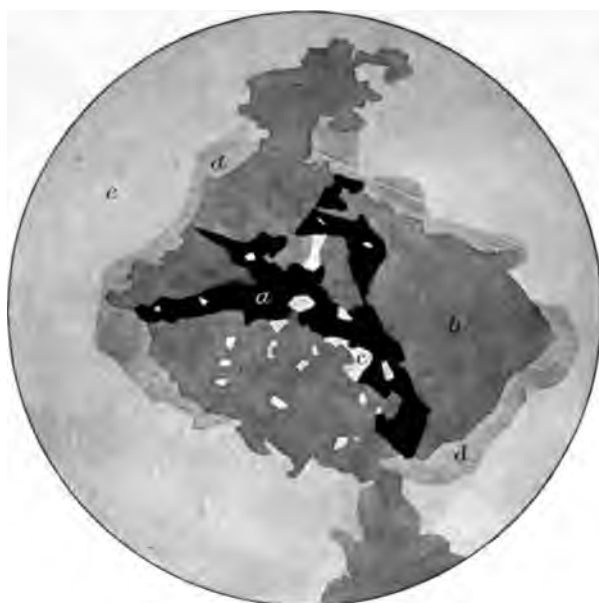
## EAR MOUNTAIN.

Ear Mountain is 50 miles north of Teller and 10 miles southwest from Shishmaref Inlet, a large, shallow body of water, not navigable for ocean vessels. Should the reported discoveries of tin be verified, and the ore occur in commercial quantities, a railroad not over 50 miles in length could be built to Port Clarence.

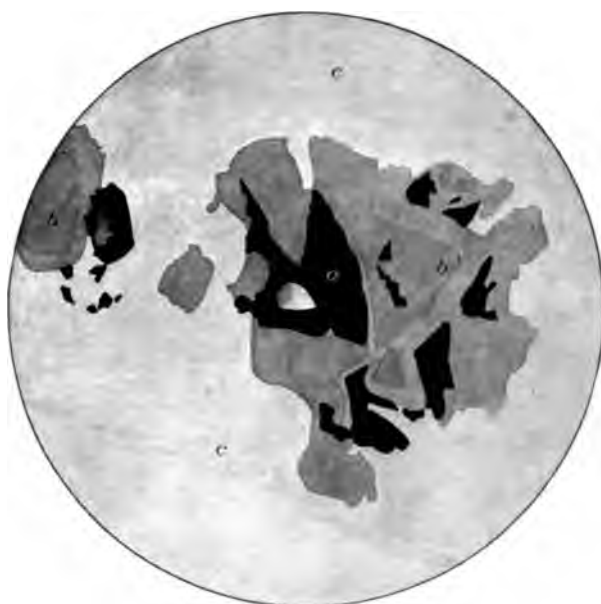
This mountain is an isolated upland mass that has an altitude of

<sup>a</sup> Collier, A. J., A reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 30, Pl. III.

<sup>b</sup> Collier, A. J., *Idem*, pp. 46-47.



*A*



*B*

THIN SECTIONS OF PORPHYRITIC DIKE ON EAR MOUNTAIN.

- A.* Magnified 23 diameters: *a*, pyrrhotite; *b*, tourmaline; *c*, quartz; *d*, feldspar; *e*, groundmass of quartz and feldspar.
- B.* Magnified 23 diameters: *a*, pyrrhotite; *b*, tourmaline; *c*, kaolin and calcite pseudomorph after feldspar; *d*, groundmass of secondary calcite.





2,308 feet above the sea. It stands on a well-marked plateau surface that has an elevation of 1,000 feet. This plateau has been correlated with the Kugruk Plateau, and is due to an earlier era of erosion than that which produced the York Plateau.<sup>a</sup>

The sedimentary rocks surrounding Ear Mountain consist mainly of quartzites and dark slates, which resemble the slates near York and have been correlated with them. The core of the mountain is a granite boss or stock intruded in these slates. Radiating from the main granite mass there is a fringe of intrusive quartz-porphyry and rhyolite dikes which are regarded as offshoots from the main intrusion.<sup>b</sup>

The granites of the main mass are coarsely crystalline and consist essentially of quartz, orthoclase, and biotite. A specimen from one of the smaller bodies, examined microscopically, is made up essentially of quartz and of orthoclase and plagioclase feldspars. A narrow dike from the same region was found to consist essentially of quartz and feldspar, with muscovite, largely secondary, and a secondary growth of feldspar surrounding the larger orthoclase crystals. In Ear Mountain a platy structure brought out by the weathering gives the rock a stratified appearance.

Tin ore has been reported to occur in this region, and it is probably true that some cassiterite has been brought out by prospectors. The specimens of supposed ore which were submitted to the writer contained, however, only traces of tin, though some of the minerals often associated with its ores were present. On the north side of the mountain quartz-porphyry dikes can be traced for considerable distances. Several specimens of these rocks have been carefully examined in the laboratories of the U. S. Geological Survey. Apparently they were originally rhyolites or quartz-porphyrines, but in thin sections they show considerable alteration. In one case the porphyritic texture of rhyolite remains, but the minerals, especially the feldspar phenocrysts, are partly replaced by tourmaline and pyrrhotite or magnetic pyrite, as shown on Pl. VI. In this case the tourmaline was probably first introduced and was followed by the pyrrhotite. No cassiterite has been identified in the section. In another section the original texture is completely obliterated and the rock consists essentially of tourmaline in radiating groups of crystals surrounded by a groundmass made up principally of calcite with some quartz (Pl. VII, 1). Magnetite and biotite seem to be present in small amounts, and probably also cassiterite, though it has not been detected in the thin sections. This specimen resembles in texture the luxullianite<sup>c</sup> from Cornwall, but differs from it in composition, since the groundmass of the typical

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<sup>a</sup> Collier, A. J., Prof. Paper U. S. Geol. Survey No. 2, p. 35.

<sup>b</sup> Collier, A. J., op. cit., p. 30.

<sup>c</sup> Harker, Alfred, Quart. Jour. Geol. Soc. London, 1895, vol. 51, p. 141. Rosenbush, H., *Mikroskopische Physiographie der Massigen Gesteine*, vol. 2, pt. 1, p. 50. Kemp, James Furman, *Handbook of Rocks*, p. 22.

luxullianite consists largely of feldspar and quartz, while in this rock it is largely calcite.

Four samples of rock from the north side of Ear Mountain were assayed for traces of tin by Mr. Sullivan of the Survey. While none of them carry tin in commercial quantities, traces of tin, estimated at a few hundredths of 1 per cent, were found in all of them. A prospecting shaft, it is reported, was sunk on one of these dikes, and samples obtained from considerable distance below the surface were found to be largely made-up of dark mica and tourmaline. It is also reported that stream tin has been found in several of the creeks that head in Ear Mountain.

#### HOT SPRINGS.<sup>a</sup>

This locality is 70 miles northeast from Port Clarence, about 30 miles southeast from the head of Shishmaref Inlet, and 30 miles from deep water on Goodhope Bay. It takes its name from a group of hot sulphur springs, well known to prospectors and miners, around which there is usually a small village of tents.

In summer time the usual route of travel to this locality is by way of Imuruk Basin and the Kuzitrin and Kugruk rivers. If tin deposits of value should be discovered in this vicinity a road would probably be constructed to Goodhope Bay. The general bed rock of this vicinity is graphitic mica-schist, but at Hot Springs this schist is intruded by a large body of granite several miles across. The granite is of the same general type as that of Ear Mountain, but it has not been examined microscopically. In Professional Paper No. 2 two characteristic landscapes within this granite area are shown on Pls. VIII and IX.

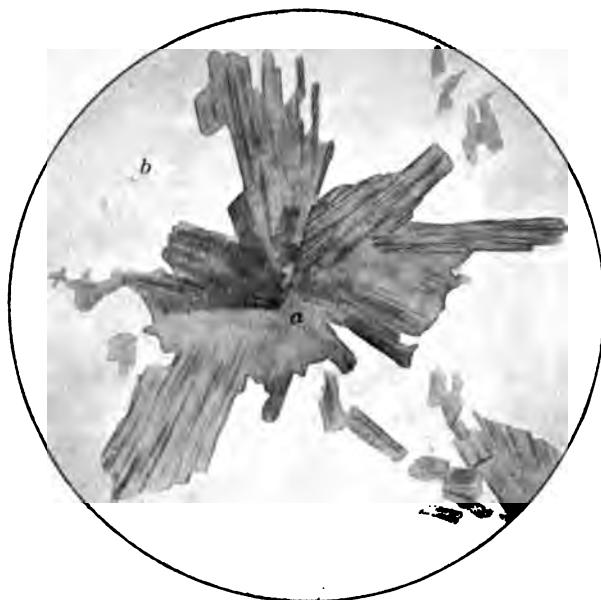
Since the discoveries of tin ore were made in the granites of the York region, prospectors have turned their attention to this area, and samples of tin ore purporting to come from it were brought to Nome late in the season of 1902.

#### ASSES EARS.<sup>b</sup>

Near the headwaters of the western tributaries of Pinnell River, in the region south of the eastern extension of Kotzebue Sound, are a number of small isolated areas of granite, surrounded by massive crystalline limestones. These granites have been more resistant to weathering than the limestones, and stand out as prominent hills or buttes. One of these forms the well-known landmark called the Asses Ears, which was so named by Kotzebue in 1816, because "its summit is in the form of two asses' ears." A few miles to the north-

<sup>a</sup> Collier, A. J., A reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 55.

<sup>b</sup> This note is furnished by Mr. Fred H. Moffit, in advance of his report on "A reconnaissance of the northeastern portion of Seward Peninsula."



**A. THIN SECTION OF LUXULIANITE FROM EAR MOUNTAIN.**  
Magnified 80 diameters: *a*, tourmaline; *b*, groundmass of secondary calcite.



**B. POLISHED SURFACE OF TIN ORE FROM LOST RIVER.**  
*a*, Cassiterite; *b*, gray pyrite; *c*, zinnwaldite mica; *d*, fluorite; *e*, groundmass of fluorite and calcite; *f*, groundmass, chiefly kaolin.



west is another granite area, smaller and much less prominent than that forming the Asses Ears. These two localities are situated south of the Sound and, since they are not favorable places for placer gold, have been rarely visited. A third granite area makes up the central mass of the elevated watershed between Kiwalik and Buckland rivers. This range extends from Kotzebue Sound to within a few miles of Koyuk River, a distance of about 40 miles. Here the granites are found only in the higher central part of the mass, and are surrounded by later eruptives, including andesitic rocks and lavas which form the lower hills.

These granites are all variable in their texture, and often have an extremely coarse, pegmatitic appearance. Twinned orthoclase feldspars, 2 or 3 inches in length and three-fourths of an inch thick, are not uncommon, and hornblende crystals of large size are found in places. Locally, quartz seems to be absent and the rock becomes syenitic in character. Fluorite was seen in joint planes in the granites northwest of the Asses Ears, suggesting the possible presence of tin ores such as occur with this mineral in the western part of Seward Peninsula.

Dr. Cabell Whitehead, of the Alaska Banking and Safe Deposit Company, reports the presence of cassiterite in the form of fine sand in gold taken from Old Glory Creek, which heads up toward the limestone area in which the previously mentioned granite masses of the Asses Ears region occur.

#### LOCALITIES WHERE STREAM TIN HAS BEEN FOUND.

##### BUCK CREEK.<sup>a</sup>

Buck Creek was the scene of the first actual mining of tin ore in Alaska, and is the present center for tin-placer mining activities. This settlement is on the Arctic slope of Seward Peninsula, about 20 miles northeast from York, and 4 miles from tide water on Lopp Lagoon, an inlet from the Arctic Ocean. It is reached by a wagon road from York, which follows the bed of Anikovich River for 10 miles, then crosses a low divide to Grouse Creek and follows Grouse Creek to its junction with Buck Creek. This road is fairly good, except for 1½ miles of soft tundra<sup>b</sup> on the divide between Anikovich River and Grouse Creek, where it is almost impassable for heavy wagons. A good road-bed could easily be built here by bringing gravel from Anikovich River. Lopp Lagoon is not navigable for seagoing vessels and affords no harbor for such craft. It is a large, shallow body of water, sepa-

<sup>a</sup> This description of the tin placers of Buck Creek is based on the work of Mr. Frank L. Hess.

<sup>b</sup> The Standard Dictionary gives the following definition of "tundra": "A rolling plain of Russia and Siberia, covered with moss and at times very moist and marshy." "The 'tundras' of northern latitudes are frozen plains of which the surface is covered with arctic mosses and other plants."—Archibald Geikie, *Text-Book of Geology*.

rated from the Arctic Ocean by a low sand spit, on the seaward side of which the shallow water is reported to extend out about 2 miles from the coast, so that landing is difficult. For small, flat-bottomed boats, however, this lagoon is navigable, and it is possible that such boats might, but not probable that they ever will, convey tin ore from the Buck Creek mines, out through the inlet, to vessels lying offshore in the Arctic Ocean. It is reported that small boats can be brought up Mint River and Grouse Creek to within 1 mile of the mouth of Buck Creek. These streams, however, are shallow and crooked, and it is not probable that they can be used successfully for conveying ore from Buck Creek to the sea.

The plateau already described extends northward from the town of York on the coast of Bering Sea to the Arctic Ocean. It has an elevation of about 600 feet near York, and slopes to sea level a few miles from the Arctic coast. Buck Creek and the other streams in its vicinity flow in comparatively new valleys cut in this plateau. Above the surface of the plateau there are several buttes, of which Cape Mountain and Potato Mountain<sup>a</sup> are the most prominent. Potato Mountain is a large, cone-shaped mountain, having an elevation of 1,370 feet. From this mountain a range of low hills extends northward for a distance of 3 or 4 miles toward Lopp Lagoon.

Buck Creek is a small stream, about 5 miles in length, which rises in this range of hills and flows southeastward to Grouse Creek. Its waters are then carried northward through Mint River and Lopp Lagoon to the Arctic Ocean. About 1 mile from its mouth Buck Creek receives a large tributary from the south, called Sutter Creek, and about 4 miles above its mouth it again forks, the two branches being known, respectively, as Right and Left forks. Several smaller tributaries are received between Sutter Creek and these upper forks.

The bed rock on which the York Plateau is developed, and in which Buck Creek Valley is incised, is a dark, slaty schist, which has been already described. Along Buck Creek it has the characteristic jointing described in the general discussion of the geology of this region.

The mountains west of Buck Creek, including Potato Mountain, are composed of similar slates. They apparently contain no intrusive, igneous rocks, either of the greenstone or granite type.

Near the mouth of Buck Creek boulders and pebbles of greenstone occur in the gravel deposits. These have not been traced to their source, but they probably came from a group of hills on the east side of Grouse Creek before the present drainage was established. At a number of places along Buck Creek small quartz veins were found cutting across the bedding or running parallel with it through the slate. Some of these quartz veins are as much as 3 or 4 feet thick,

<sup>a</sup>The name Conical Hill was applied to this mountain by Captain Beechey in 1826. It is said to have been called "Potato Mountain" by the Russians. On the topographic map, Prof. Paper No. 2, Pl. XII, the mountain is called "Cone Hill."

and two of them can be traced for a quarter of a mile or more. Most of the veins are mere stringers, 1 or 2 inches thick and only a few feet long. In one instance a vein of nearly pure pyrite 6 or 8 feet wide was seen. Pebbles of pyrite 2 or 3 inches in diameter, oxidized on the outside, are found in the gravels below this vein.

Mr. Edgar Rickard<sup>a</sup> reports on this deposit as follows:

The source of the cassiterite can be readily traced to the slate of the [Potato Mountain] range, where it undoubtedly occurs in countless small veins and vugs, sometimes associated with quartz and so thoroughly scattered through the mass that the action of the elements has washed it from the hillsides and concentrated it in the streams below in appreciable deposits.

Though specimens obtained from the gravel show that this is true, no veins of this kind were seen by Mr. Hess nor by the number of prospectors who were actively engaged in a search for tin-bearing veins. It is of interest to note that no granitic rocks or acid intrusives of any kind have been found associated with the phyllites, nor have any pebbles of such rocks been found in the gravels. So far as the surface indications show, it appears that the tin ore has its source in veins which are of distinct origin from those found in association with granitic rocks.

The gravel deposits in the bed of Buck Creek are from 10 to 150 feet wide, varying greatly in different parts of the creek.

Cassiterite, in the form of stream tin, is distributed from the mouth of the creek to within a mile of its head, above which point little more than traces have been found. The ore varies in size from fine sand to pebbles weighing 13 or 14 pounds. Several pieces from 5 to 8 pounds in weight were seen by Mr. Hess, though the average size is much smaller. A few of the pebbles are perfectly rounded, but most of them are subangular. The ore from the claims near the mouth of Buck Creek is generally well rounded, while that from near the head is sharp and angular. In general the stream tin grows more angular as the head of the creek is approached.

The color of the cassiterite varies from almost black to a light resin or amber; when crushed, however, it makes a light-colored resinous powder, by which it is readily distinguished from hematite or other iron minerals that are frequently mistaken for it, since they invariably give a distinctly red, brown, or black powder. A number of specimens were obtained with pieces of quartz and slate still attached to them, leaving no doubt as to the local origin of the fragments. Sometimes small pieces of cassiterite are found inclosed between fragments of slate, showing that the ore sometimes occurs as veinlets in the bed rock.

Near the head of Buck Creek Mr. Edgar Rickard,<sup>a</sup> in 1902, tested

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<sup>a</sup> Rickard, Edgar, Tin deposits of the York region, Alaska: Eng. and Min. Jour., vol. 75, 1903, p. 30.



the gravels systematically and found that they contain about 8 pounds of 60 per cent ore to the cubic yard. The value per yard on this basis, with tin at 28 cents per pound, would be \$1.34, out of which charges for shipping and treatment would have to be paid.

Mr. Hess saw pannings made at a number of places along Buck Creek, but not enough to test thoroughly the richness of the gravels. The best that were seen came from immediately above the mouth of Sutter Creek, where a drain ditch from 2 to 2½ feet deep was under construction. Seven pans taken from various parts of the gravel thrown out of this ditch gave about 1 pound 6 ounces of concentrates. Estimating 20 pounds of gravel to the pan, this would give approximately 27 pounds of, say, 60 per cent ore to the cubic yard of gravel. Bed rock was here 5½ feet below the surface, and the gravel approximately 100 feet wide. A few good colors of gold were found in the concentrates. At this point there seemed to be no difference in the distribution of the tin ore through the gravels below the surface. It seemed from the evidence of prospectors that this uniform distribution through the gravels prevailed generally along the creek, though at one place it was found to be richer on bed rock.

It is reported that cassiterite has been found in a bench near the upper forks of Buck Creek, but no definite data were obtained concerning the nature of the occurrence.

On Grouse Creek, below the mouth of Buck, the amount of tin ore is reported to be very small, and while Mr. Hess found no evidence of prospecting in this section, and is of the opinion that practically none has been done there, the gravel deposits are more extensive than those on Buck Creek and seem to be worthy of attention. No large amounts of cassiterite have been reported from either Gold Creek, a tributary of Grouse above Buck, or from Sutter Creek, the large southern tributary of Buck, nor has much gold been found there.

To summarize the evidence with regard to the Buck Creek region, tin ore has been found in the gravels of the creek from its mouth to within 1 mile of its head. The pay streak appears to be confined to the present stream-bed and flood-plain deposits. In the present creek bed the ore is found from the surface to the bottom of the gravels. Outside the creek bed, in the flood plain, there is a covering of moss and muck above the pay gravel. No cassiterite is known to have been found on the hillsides surrounding Buck Creek or on the plateau surface in which Buck Creek Valley is incised, though such an occurrence is to be expected. The known pay streak varies in width from 10 to 150 feet, and in thickness from a few inches to 5 feet. Estimates of the amount of tin ore in the gravels vary from 8 to 27 pounds per cubic yard, but very few comprehensive tests have been made.

At the time of Mr. Hess's visit to Buck Creek, near the end of

July, sluicing for tin ore was in progress at only one place. The creek valley still contained great drifts of snow, and mining operations generally were retarded by the lateness of the season.

Stream tin is harder to separate from the gravel than is gold on account of its lower specific gravity, but the methods employed in washing it out were modifications of somewhat primitive processes of gold placer mining. Ten men were shoveling into the one "string"

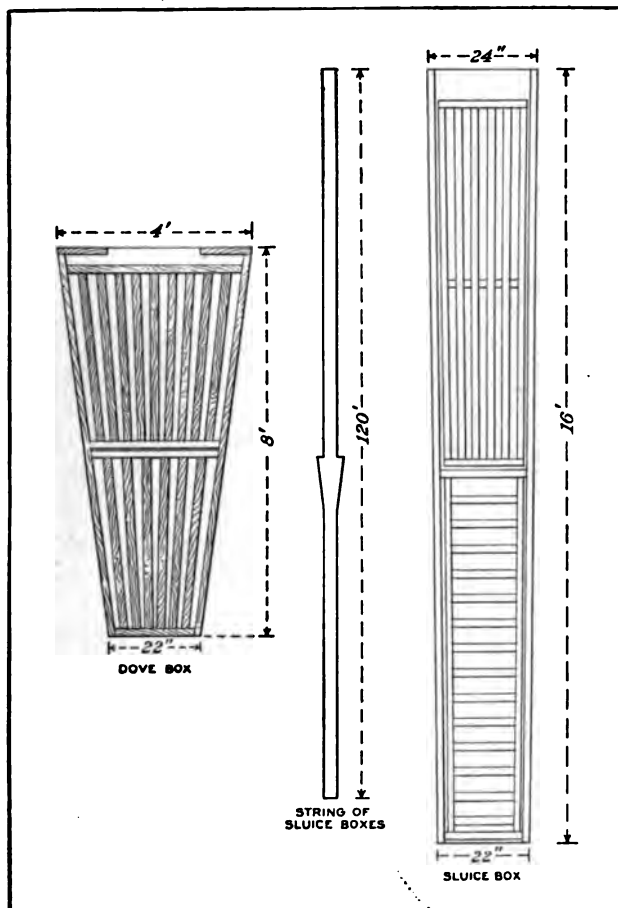


FIG. 4.—Sluice boxes used in washing placer tin in York region.

of sluice boxes and a clean up was made four times a day, so that the work was frequently interrupted. The sluice boxes used were 16 feet long, 24 inches wide at the upper end and 22 inches wide at the lower end, and 7 boxes were used in a "string," making a total length of 150 feet. A "dove box" 8 feet long, 4 feet wide at the upper end and 22 inches wide at the lower end, with riffles, was

introduced between the fourth and fifth boxes from the upper end (see fig. 4). Ordinary patterns of Pole and Hungarian riffles were used, except that they were made of  $2\frac{1}{2}$  by  $1\frac{1}{2}$  inch material, which is larger and heavier than that ordinarily used in sluicing for gold. About 100 miner's inches of water constituted a sluice head for this apparatus. It is reported that the concentrates obtained averaged about 40 pounds per day to the shovel. The concentrates from the sluice boxes were further concentrated by hand by panning in a box 5 feet long by 3 feet wide and 8 inches deep, into which water flowed

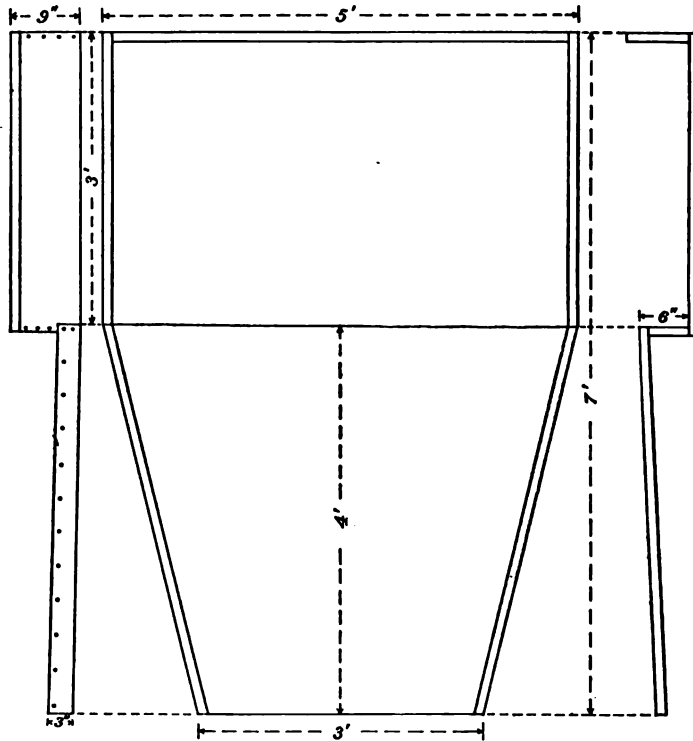


FIG. 5.—Box used in washing stream tin concentrates.

through a canvas hose and flowed out over an apron  $\frac{1}{4}$  feet long in a stream about three-quarters of an inch deep, as shown in fig. 5. The concentrated gravel was gradually worked up over the edge of the pan, which was kept just submerged at the upper end of the apron, where the stream of water carried away the lighter portion, while the heavier particles sank in the box. It is reported that concentrates treated in this way averaged about 50 per cent tin. The larger pieces of foreign matter were picked out by hand. The impurities in the concentrates are mainly hematite, magnetite, quartz, and slate.

Later in the season some sluicing for tin ore was done at several

other points on Buck Creek, and altogether a considerable amount of tin ore, estimated at from 30 to 40 tons, was obtained and hauled to York for shipment.

Should further prospecting demonstrate that there are large amounts of stream tin in Buck Creek or any of the neighboring streams, practical mining will require the introduction of more economical methods to overcome the handicap of short seasons and high wages. In other parts of Seward Peninsula hydraulic mining has been practiced with marked success in the gold placers, and the same method can probably be adapted to the tin placers as well. Water for this purpose can be obtained from the streams rising in the York Mountains. The feasibility of collecting water from these streams for working the tin placers of Buck Creek and vicinity will be readily seen from the topographic map of the region (Pl. II), but the question whether or not the deposits will warrant the necessary expenditure can not be settled without further development.

#### ANIKOVIK RIVER AND BUHNER CREEK.

The localities on Anikovich River and Buhner Creek, where tin ore was discovered in 1900, are 2 and 3 miles, respectively, from York. Buhner Creek flows into Anikovich River from the west, a short distance north of the point where Banner Creek enters the Anikovich. The following description of these deposits is quoted from Mr. Brooks:<sup>a</sup>

On Buhner Creek 2 or 3 feet of gravel overlies the bed rock, which consists of arenaceous schists, often graphitic, together with some graphitic slates. This is part of the schist series which has been described. The bed rock is much jointed, the schists being broken up into pencil-shaped fragments. They strike nearly at right angles to the course of the stream and offer natural riffles for the concentration of heavier material. A hasty reconnaissance of the drainage basin of this stream, which includes not more than a square mile of area, showed the same series of rocks throughout its extent. At a few localities some deeply weathered, dark-green intrusives were found, which, on examination by the microscope, were found to consist almost entirely of secondary minerals. In some cases, however, a little plagioclase was still unaltered and a suggestion of ophitic structure remained, so that these are probably of a diabasic character. The slates and schists are everywhere penetrated by small veins, consisting usually of quartz with some calcite, and frequently carrying pyrite and sometimes gold. These veins are very irregular, often widening out to form blebs, and again contracting so as not to be easily traceable.

The stream tin is concentrated on the bed rock with other heavy minerals, and was found by the miners in the sluice boxes. A sample of the concentrate<sup>b</sup> in one of the sluice boxes was examined by Mr. Arthur J. Collier, and yielded the following minerals: Cassiterite, magnetite, ilmenite, limonite, pyrite, fluorite, garnets, and gold. The determination of percentage by weight was as follows: 90 per cent tin-

<sup>a</sup> Brooks, A. H., An occurrence of stream tin in the York region, Alaska: Mineral Resources U. S. for 1900, U. S. Geol. Survey, 1901, p. 270.

<sup>b</sup> The sample of these concentrates from which the first determination of tin ore in Alaska was made was obtained from C. B. Kittredge, who was mining on Buhner Creek. Another sample was obtained from Mr. Trumble, a miner on Anikovich River.

stone; 5 per cent magnetite; other minerals, 5 per cent. The cassiterite occurs in grains and pebbles, from those microscopic in size to those half an inch in diameter; they have subrounded and rounded forms. In some cases there is a suggestion of pyramidal and prismatic crystal forms. The cassiterite varies in color from a light brown to a lustrous black.

A second locality of this mineral was found on the Anikovik River, about half a mile below the mouth of Buhner Creek. Here the cassiterite was also found with the concentrates from the mining operations. One pebble of stream tin obtained from this locality was about 2 inches in diameter.

It will be necessary to make a more detailed examination of this region to determine where this mineral occurs in the bed rock. The facts obtained by the writer point toward the conclusion that its source was in the quartz and calcite veins in which the gold was found. No cassiterite was, however, found in this vein material.

Since 1901 these workings have been abandoned by miners, neither gold or cassiterite having been found in paying quantities. On Anikovik River there are extensive gravel deposits, which may possibly be made to yield fair returns either in gold or tin if economically worked on an extensive scale by hydraulic methods. Sufficient water for this purpose can probably be obtained either from the head of Anikovik River or from Kanauguk River.

#### LOCALITIES FROM WHICH STREAM TIN HAS BEEN REPORTED.

It is reported by prospectors familiar with the Buck Creek deposits that some tin ore has been found in alluvial deposits on Baituk and Kigezruk creeks, flowing into Bering Sea; in Banner Creek, tributary to the Anikovik; several small streams flowing into Lopp Lagoon; Clara Creek, a tributary of Mint River; and in York Creek, a tributary of Pinguk River, all in the York region. Stream tin has also been reported from all parts of Seward Peninsula where gold mining is in progress, but outside of the York region these reports have generally been without foundation. Last summer, however, Mr. Hess obtained from a miner a specimen of stream tin said to have been found on Gold Bottom Creek, a tributary of Snake River, in the Nome district. If this find was genuine it indicates a wider distribution of the tin ore than has heretofore been supposed, and is the only case known in which stream tin has been found in the gold placers near Nome. There is probably not enough tin ore there to have economic value.

The bed rock of Gold Bottom Creek consists of limestones and schists of the Nome series.

#### SUMMARY OF ECONOMIC GEOLOGY.

Tin ore in considerable quantities has been found in the York region at a number of widely separated localities, the extreme points known being 25 miles apart. While the existence of tin ore in sufficient quantities to be worked on a profitable scale has not yet been demonstrated because of the remoteness of the region, the inhospitable

climate and the cost of labor, the probabilities are that further development will prove some of the deposits to have commercial value.

The ore occurs in both alluvial deposits and in ledges. The ore of the alluvial deposits has been traced in some cases to small veinlets and vugs in the slate country rock, where it has no visible connection with intrusions of granite or other igneous rock, and in others to well-defined dikes or veins of greisen. This lode ore is associated with granite or other siliceous, igneous, intrusive rocks, that have been altered to true greisen like that occurring in nearly all productive tin regions.

In one case the cassiterite occurs disseminated through a greisen composed of quartz, calcite, fluorite, and lithia mica. In another case the tinstone is intimately associated with tourmaline contained in veins in the granite.

The granites in which tin ore has been found are intruded in limestones of Silurian age in one case and probably of Carboniferous age in another. Similar bodies occur northeastward from York for a distance of 100 miles. Minerals associated with the tin ore in the York region, such as fluorite and tourmaline, have been found in several of these granite areas, and tin ore has been reported from some of them, but its existence outside of the York region has not yet been proved.

Some of the promoters of mining enterprises have expressed a desire to install immediately a complete outfit for milling and smelting tin ore at some point in the York region. The many fiascos resulting from the building of mills and smelters before the extent of ore bodies had been determined are well known to anyone familiar with the history of mining in the United States, so that the folly of this plan is evident. Even after the ore is proved to exist in sufficient quantities for mining a careful study must be made of the ore itself, and of the conditions as affected by climate, wages, fuel supply, and transportation, before either the proper place or method of treating the ores can be determined. The erection of a smelter at present would seem to be ill advised, if for no other reason than because no estimable supply of ore exists. In estimating the value of tin ores in this northern region several facts must be borne in mind. The region is devoid of timber and is accessible by ocean steamers, at the longest, only from the first of June to the end of October. Harbor facilities are poor, and all supplies and wages are high. On the other hand, the construction of railroads and wagon roads would not be difficult, and, if demanded, would require comparatively little outlay of capital.

#### TRANSPORTATION AND FUEL SUPPLY.

In view of the possible developments of tin mining in this region the *questions of transportation and harbor facilities* become important.

The coast line of the York region is not broken by any inlet or harbor suitable for seagoing vessels. Such craft are obliged to lie a safe distance offshore, while landings of freight or passengers are made with lighters or small boats through the surf, as at Nome. During much of the time the sea is smooth and such landings are easy, but frequently violent storms continue for several days, which would destroy lighters and endanger the ships themselves. In fair weather vessels could be loaded in safety from piers, but the possibility of maintaining docking or other loading facilities along this coast is questionable on account of the movement of great ice floes that cover Bering Sea during the long winter.

Port Clarence, the only harbor and safe anchorage for large vessels in Seward Peninsula, is a bay 25 miles southeast of York, and, should the tin deposits be worked on an extensive scale, this harbor is easily accessible. It is a large body of comparatively deep water, nearly circular in outline, and cut off from the sea by a long, low sand spit, which terminates in Point Spencer at the entrance to the bay.

Along the north side of Port Clarence there is a shallow lagoon, separated from the bay by a narrow sand spit. This lagoon extends several miles west of the entrance to Port Clarence. It can be made use of for transporting ore in lighters and small boats. The Coast Survey charts show deep water suitable for large vessels along the north shore near the entrance to the bay, and docks and wharves would naturally be built there. On the south side of the entrance, at Point Spencer, a safe anchorage near shore is made use of as a coaling station by whalers en route to the Arctic Ocean. It is reported that the ice leaves this part of Port Clarence first, at the opening of summer, and that vessels have made use of this anchorage before they were able to approach the coast at Nome. It is therefore possible that Point Spencer might be the most convenient shipping point for the York region. The product of the mines could be brought to the coast of Bering Sea by tramroads or wagons, and, in the summer time, ferried across to Point Spencer, or in the winter hauled over the ice either by traction engines or by horses. Should production be sufficient to warrant it a railroad can easily be built from some point on the north shore of Port Clarence to Lost River and up its valley. Should the mines on Buck Creek warrant the building of a railroad the Lost River line could be extended across the divide at the head of Lost River to Mint River, and thence follow around the northern foothills of the York Mountains to Buck Creek. This road could again be extended from Buck Creek to the locality at Cape Mountain. It would probably not be practicable to build a road along the coast from the mouth of Lost River to York.

During the summer season there is sufficient water in the streams of the region to furnish power for all the machinery required in mining

and concentrating, but, obviously, during the winter this source of power is cut off, and coal or other fuel must be used. In Alaska there are two possible sources of coal for the York region. One of these is near Cape Lisburne,<sup>a</sup> about 200 miles northeast of York, on the shore of the Arctic Ocean. There is reported to be an abundance of coal suitable for steaming purposes at this place, but there are absolutely no harbor facilities and there is no wood available for timbering the mines, and, further, navigation on the Arctic Ocean is possible for only two months of the year; so that these coal beds can not be depended on to furnish a coal supply.

The other source of coal is at Herendeen Bay and Port Moller, about 700 miles to the south, on the Alaskan Peninsula, but this coal has not been sufficiently developed to determine whether it exists in commercial quantities. At the present writing it seems that the only certain sources of fuel for the Seward Peninsula are the coals of the State of Washington and those of British Columbia. On account of the difficulty in obtaining fuel and the cost of labor and subsistence in the Seward Peninsula it does not seem possible that the smelting of tin ore in the York region will ever be successfully accomplished. The ore from this region will necessarily be shipped either to the coal mines in other parts of Alaska, to Puget Sound, or to other points for smelting. The freight on ore shipped from Port Clarence to Seattle would probably be very low, since the large number of vessels carrying freight to Seward Peninsula and St. Michael would desire return cargoes.

In the summer of 1902, 98,822 tons of freight were carried to these points.

#### TIN ORES AND ASSOCIATED MINERALS.

*Physical characteristics of tin ore.*—Cassiterite, tinstone, or tin ore, the dioxide of tin, is the most common form in which tin occurs in nature. It crystallizes in four-sided prisms and octahedrons, but twinning is so common that simple crystals are rarely found. The stream tin of the York region usually occurs in rounded pebbles, its color varying from light brown to black; the color of the streak—that is, of the powdered mineral—is pale gray to brownish. Wood tin is cassiterite that occurs in botryoidal and reniform shapes, with concentric and radiated fibrous internal structure, though very compact. Its color is brownish in varying shades, which give it somewhat the appearance of dry wood. A few specimens of wood tin have been found on Buck Creek. Cassiterite has no distinct cleavage visible to the naked eye. It has about the same hardness as quartz, but is very much heavier, having a specific gravity, when pure, of from 6.4 to 7.02.

<sup>a</sup> Schrader, F. C., A reconnaissance in northern Alaska in 1901: Prof. Paper U. S. Geol. Survey No. 20, 1904, pp. 109-114.



Specimens of the ore mined in the York region, which were tested in this office, gave specific gravities from 5.15 to 6.06. Since cassiterite is heavier than most of its associated minerals, it can usually be separated from them by crushing and panning. The most satisfactory test for cassiterite that can be made in the field is with the blowpipe, as follows: The mineral, crushed and finely powdered, is mixed with about equal amounts of powdered charcoal and soda, and heated gently in the reducing flame. Metallic tin is readily obtained in small globules scattered through the assay, but it is more difficult to collect the metal into one globule, and in attempting it an unskilled operator will usually reoxidize the tin.

Stannite, or tin pyrites, is sulphide of tin, copper, and iron with some zinc. Some varieties contain silver, lead, or antimony. Stannite resembles pyrites and other metallic sulphides, and is not easily distinguished in the field. The blowpipe tests are unsatisfactory, since it is impossible to obtain a tin globule from it. This ore, when pure, contains only 27 per cent tin, and is not mined except in conjunction with other ores. It has been found on Tin Creek in the York region.

#### ASSOCIATED MINERALS.

In the York region the most common minerals accompanying tin are quartz, tourmaline, epidote, garnet, rutile, fluorite, wolframite, magnetite, hematite, limonite, and ilmenite. Of these, tourmaline, garnet, rutile, wolframite, magnetite, limonite, and quartz have often been mistaken for tin ore.

*Tourmaline.*—This is a complex silicate of boron and aluminum. In the York region it occurs in slender three, six, or nine sided prisms, brownish black and bluish black in color. These prisms are often arranged in radiating groups. Tourmaline is distinguished from cassiterite by its crystallization and by its specific gravity, which varies from 2.98 to 3.20. Before the blowpipe the tourmaline of the York region is fusible without fluxing, while cassiterite is infusible.

*Garnet.*—In the York region garnet often occurs in massive, granular aggregates, which greatly resemble tinstone. To the experienced eye they are readily distinguishable by slight differences in color. Garnet has a specific gravity from 3.15 to 4.30; in other words, it is a little more than half as heavy as tinstone. It crystallizes in the isometric system, and never forms elongated prisms. Like tourmaline, it fuses before the blowpipe.

*Rutile.*—Titanium dioxide, or rutile, occurs in crystals, which in hardness, specific gravity, and crystallization resemble cassiterite. The crystals, however, are usually slender prisms, striated or furrowed lengthwise. The streak is pale brown. This mineral has not been found in the ledges, but in alluvial deposits it has often been mistaken for tinstone.

*Wolframite*.—This is an ore of the metal tungsten, a tungstate of iron and manganese. It has a submetallic luster, a grayish or brownish-black color, and a black streak. Its specific gravity is 7.2 to 7.5, a little higher than that of cassiterite, but it is readily distinguished from the latter mineral by possessing a perfect cleavage.

*Epidote*.—This complex silicate of calcium, aluminum, and iron is usually of a yellowish-green color. On Tin Creek it is found in prismatic crystals forming divergent groups resembling the tourmaline, which is also found there. In luster, streak, and hardness it resembles cassiterite, but its specific gravity is 3.25 to 3.50, only a little more than half as heavy as cassiterite. Before the blowpipe it fuses easily, and in the closed tube gives water.

*Magnetite and limonite*.—These ores of iron are found in the placers associated with stream tin. They are often mistaken for tin ore, but are readily distinguished by the practiced eye. Magnetite can be distinguished by the use of a magnet, while the red or brown streak of limonite serves to separate it from the tin ore.

*Fluorite*.—This mineral, commonly known as fluorspar, occurs in the bed rock associated with the tin ore wherever found in the York region. It is a simple chemical combination of fluorine and calcium, crystallizing in cubes and having a vitreous luster and usually a white, wine-yellow, greenish-blue, or violet-blue color. Its specific gravity is from 3.01 to 3.18. It is easily scratched with a knife, its hardness being about equal to that of calcite, from which it is distinguished by its cubic crystallization and failure to effervesce with hydrochloric acid.

*Quartz*.—In varying amounts quartz is also associated in the bed rock with the tin ore. Usually it is readily distinguished from the cassiterite, but instances were common last summer where prospectors had mistaken a dark-colored, smoky quartz in small grains for cassiterite. The specific gravity of quartz is 2.65 to 2.66, so that by the panning test the quartz can readily be separated. In powdered form smoky quartz and cassiterite resemble each other so much that the blowpipe test is often required to distinguish them.

#### METHODS OF ASSAYING TIN ORE.

Accurate assays of tin ore by ordinary methods are difficult on account of the readiness with which the tin combines with the various gangue minerals, forming silicates and stannites, which pass off with the slag.

Nearly all writers on the subject of tin assays recommend that only rich ores, practically almost pure cassiterite, be treated by fire assay. Stream tin is ordinarily pure enough to give an approximately accurate result without further concentration, but lode ore, associated as it is

with gangue minerals, must be concentrated. Without such treatment it is impossible to obtain even an approximate estimation by the dry method usually employed, and in an ore containing less than 10 per cent it is probably impossible to obtain any tin at all. A study of the literature regarding tin analyses has convinced the writer that the reports of dry assays of low-grade tin ores, in which the cassiterite can not be recognized by the naked eye or separated by hand panning, are of no value.

For assaying<sup>a</sup> the ore is first pulverized and screened to uniform size, care being taken in the crushing to prevent the formation of slimes, since cassiterite is very brittle. The pulp is then roasted in a muffle to decompose any sulphides and arsenides that may be present. After roasting, and while still hot, it is thrown into cold water, which finely subdivides the ore and exposes a much larger surface to the action of acids. The ore is then boiled with nitrohydro-chloric acid to remove all soluble metallic compounds. This boiling must be continued until iron ceases to dissolve. The ore is then washed with hot water, transferred to a gold pan, and washed free from visible impurities. The ore thus prepared for assay may be treated by either of the two following methods, the first being preferred:

The finely pulverized ore is mixed with five times its weight of chemically pure potassium cyanide, then fused in a clay crucible in a bright fire. A steady fusion is kept up for from 10 to 15 minutes at the highest point to which potassium cyanide can be heated without showing heavy fumes.

Five grams of KCN are rammed into the bottom of the crucible. The charge, consisting of 10 grams of ore mixed with 40 grams of potassium cyanide, is then poured into the crucible, and 5 grams of KCN placed on top of the charge.

A "G" Battersea or Denver crucible may be used for pot-furnace work, and a "B" or 20-gram Colorado crucible will probably do for muffle work.

The following charge is said to be taken from Kerl and Balling.<sup>b</sup>

Five grams of ore are intimately mixed with 0.75 to 1 gram of charcoal dust and charged into a clay crucible. On top are placed 12.5 to 15 grams black flux <sup>c</sup> (or substitute) with 1 to 1.25 grams borax glass, then a salt cover, and finally a piece of charcoal. The crucible is covered, heated in a muffle or a pot furnace at a moderate gradually increasing temperature until the boiling has ceased, and then from one-half to three-fourths of an hour at a white heat. The crucible is removed from the fire, broken when cool, and the tin button weighed.

The salt cover should be about one-fourth inch thick. It would seem that finer charcoal would cover the charge as well as a single piece, for the object is to keep the charge in a reducing atmosphere. These methods are found to give within 0.5 per cent of the results of wet assays when used with well-cleaned minerals.

<sup>a</sup> Hofman, H. O., The dry assay of tin ores: Trans. Am. Inst. Min. Eng., vol. 18, 1890, pp. 3-54.

<sup>b</sup> Kerl, Metallurgische Probirkunst, Leipzig, 1882, p. 412. Balling, Die Probirkunde, Brunswick, 1879, p. 391.

<sup>c</sup> Black flux is 1 part niter ( $\text{KNO}_3$ ) and 3 parts argol, deflagrated. Black flux substitute is 2 parts potassium carbonate or sodium bicarbonate and 1 part flour.

All ores must be crushed and carefully concentrated by sizing and panning. For a prospector's field test of ore supposed to carry a small percentage of tin, a practical method would be to crush the supposed tin ore in a hand mortar and concentrate by panning, after which the concentrates can be roasted and cleaned with a magnet and the residue tested with a blowpipe, as has been described.

As small globules of tin, such as are obtained by the blowpipe, are sometimes unsatisfactory, more metal can be reduced by simple means. While at Teller this seemed desirable, and an old teacup was lined one-fourth inch thick with a paste of powdered Wellington coal and baked. The finely pulverized ore was mixed with an equal bulk of powdered coal and twice as much ordinary baking soda; this charge was placed in the cup and covered one-half inch deep with powdered coal and heated for forty-five minutes in an ordinary cook stove with as hot a fire as possible. Although the cup broke upon attempting to remove it from the fire, good-sized buttons of tin, as large as a pea, were obtained. After determining the presence and the relative value of the washed cassiterite, pan assays will be found sufficient for further tests.

Greater accuracy in the assay of tin ores is obtained by wet analysis. Such analyses of eight samples of low-grade tin ores from the Seward Peninsula were recently made in the laboratory of the United States Geological Survey. These ores contained no visible crystals of cassiterite, and were treated without mechanical concentration. The following note in regard to the wet method of analysis is furnished by Mr. Eugene C. Sullivan, of the United States Geological Survey:

The method used in detecting traces of tin was as follows: Two grams were roasted in platinum crucible, fused with potassium bifluoride (KHF), and the melt was twice evaporated with concentrated sulphuric acid ( $\text{H}_2\text{SO}_4$ ) to insure absence of hydrofluoric acid (HF). The mass was taken up with dilute sulphuric acid ( $\text{H}_2\text{SO}_4$ ), in which practically all dissolved. The solution was decanted from any slight residue, which was fused as before with potassium bifluoride (KHF) and after driving off hydrofluoric acid (HF) by means of sulphuric acid ( $\text{H}_2\text{SO}_4$ ) added to the main solution. The solution was nearly neutralized with ammonium hydroxide ( $\text{NH}_4\text{OH}$ ), and hydrogen sulphide ( $\text{H}_2\text{S}$ ) was passed through it for several hours. The precipitate was digested for some time with yellow ammonium sulphide, being warmed slightly. The insoluble residue was filtered out, the filtrate acidified slightly with sulphuric acid ( $\text{H}_2\text{SO}_4$ ), and hydrogen sulphide ( $\text{H}_2\text{S}$ ) was passed to insure complete precipitation of stannic sulphide ( $\text{SnS}_2$ ). The precipitate was filtered out and ignited, again fused with potassium bifluoride (KHF), evaporated with concentrated sulphuric acid ( $\text{H}_2\text{SO}_4$ ), taken up with dilute sulphuric acid, stannic acid ( $\text{H}_2\text{SnO}_3$ ) precipitated with ammonium hydroxide ( $\text{NH}_4\text{OH}$ ), the precipitate dissolved in hydrochloric acid, any residue filtered out, the solution neutralized with ammonium hydroxide ( $\text{NH}_4\text{OH}$ ) and hydrogen sulphide ( $\text{H}_2\text{S}$ ) passed for some hours.

Where the tin was present a yellow precipitate of stannic sulphide ( $\text{SnS}_2$ ) separated, apparent on allowing the solution to stand for some time. To obtain an idea of the amount of tin present this precipitate, after thorough washing, was ignited and weighed as stannic oxide ( $\text{SnO}_2$ ).

## OCCURRENCES OF TIN ORE IN THE UNITED STATES.

The total amount of metallic tin produced from ore mined in the United States has not exceeded 200 tons, though small amounts have been found in no less than 17 States and Territories: Alabama, Alaska, California, Colorado, Connecticut, Georgia, Idaho, Maine, Massachusetts, Missouri, Montana, New Hampshire, North Carolina, South Dakota, Texas, Virginia, Wyoming.

In Alabama, cassiterite occurs in quartz veins in graphitic schists<sup>a</sup> near granite, and as disseminated grains in gneiss.

In California<sup>b</sup> small amounts of float cassiterite have been found in the gold placers at a number of widely separated localities. The ore is found in places at the Temescal mine, 5 miles southeast of Riverside. At this place there is an area of hornblende biotite-granite over 2 miles in diameter which is cut near its borders by dikes of highly quartzose and feldspathic fine-grained granite. The ore occurs in veinlets of tourmaline and quartz aggregates which run northeast and southwest through the granite. A great body of such vein matter, covering an area 300 by 250 feet, and 25 to 30 feet high, crops out in the Cajalco Hill. What is known as the Cajalco vein courses northeast from this outcrop, and the workings extend for 1,100 feet along it. The vein is sinuous, and varies from a minimum of a clay seam to a maximum of 8 feet. There is always a clay gouge on one and often on both walls. Two hundred and ninety-one and fourteen one-hundredths pounds of metallic tin were produced from ore mined at Temescal previous to 1892, when the mines were abandoned.

In the Carolinas a tin belt<sup>c</sup> extends in a northeast-southwest direction for about 31 miles, and lies partly in North Carolina and partly in South Carolina. Tin ore is not evenly distributed through this distance, though the tin-bearing formation, which consists of crystalline schists or gneisses containing pegmatitic dikes, is continuous. The rocks of the tin belt are very much decomposed, and the pegmatite dikes are very thoroughly kaolinized. The tin ore has been found loose in the soil, in the gravels, in boulders of quartz and mica, and occasionally in the pegmatite dikes. The most promising deposit in the belt is at the Ross mine, near Gaffney, S. C., from which 38,471 pounds of the ore were shipped in 1903.

In Colorado tin ore has been reported near Golden, but little is known of its occurrence.

<sup>a</sup>Phillips, Wm. B., Geol. Survey of Alabama, Bull. No. 3, 1892.

<sup>b</sup>Sixth Ann. Rept. California State Min. Bureau, Sacramento, 1886. Eleventh Ann. Rept. California State Min. Bureau, Sacramento, 1893. Fairbanks, Harold W., Tin deposits at Temescal: *Am. Jour. Sci.*, 4th ser., vol. 4, 1897, pp. 39-42. Rolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1895, p. 536.

<sup>c</sup>This note is furnished by Joseph Hyde Pratt in advance of Economic Paper No. 8 of the North Carolina Geological Survey on "Carolina tin deposits."

In Connecticut tin ore has been found at Haddam, but only as a mineralogical curiosity.

In Georgia tin ore has been reported from Lumpkin County as occurring in granite and chlorite schists, with minute quantities from the gold washings.

In Idaho a few specimens of stream tin have been found on Jordan Creek, in the southwestern part of the State, and in the Coeur d'Alene district.

In Maine<sup>a</sup> cassiterite occurs at Winslow in small veins, which traverse impure limestone, with purple fluorite, mica, quartz, and mispickel. These veins have been prospected to a depth of 100 feet, but have yielded no tin in commercial quantities. Similar occurrences are reported at Paris and Hebron.

In Massachusetts a few crystals of cassiterite have been found with albite and tourmaline at Goshen and Chesterfield.

In Missouri<sup>b</sup> a small amount of cassiterite has been found replacing sphene in granite.

In Montana<sup>b</sup> stream tin has been found in Prickly Pear, French Bar, and Ten Mile creeks, in the "Basin" in Basin Gulch and in Peterson Creek. Light-brown, rounded pebbles of wood tin associated with topaz crystals have been found at one locality.

In New Hampshire cassiterite was found at Lynn and Jackson in 1840 by Doctor Jackson. It occurs with arsenical and copper pyrites, fluorspar, and phosphate of iron in small quartz veins, and mica, slate, and granite near a trap dike.

In South Dakota<sup>c</sup> the Black Hills contain noteworthy deposits of tin ore, which, however, have not yet proved commercially productive. They occur in an area of coarse-grained granite in the central part of the hills. The Etta mine deposit, the only one that has produced any considerable quantity of tin, is a lenticular body of pegmatitic granite, which consists of quartz, feldspar (albite), lepidolite, and spodumene in individuals of great size, up to 8 or 9 feet in dimensions. Cassiterite occurs in association with lithia mica and is accompanied by columbite and tantalite, with which it is apt to be confused. The mine was sold to an English company, which erected a 250-stamp mill, but the ore did not prove profitable to work, and after the first run, which produced 9,385 pounds of tin, the work was closed.

In Texas<sup>d</sup> tin has been discovered in quartz veins occurring in greisen granite in the Franklin Mountains near El Paso, and one small crystal

<sup>a</sup> Jackson, C. T., On the discovery of a new locality for tin ore in Winslow, Me.: *Proceedings Boston Soc. Nat. Hist.*, vol. 12, 1869, p. 267. Hunt, T. S., Remarks on the occurrence of tin ore at Winslow, Me.: *Trans. Am. Inst. Min. Eng.*, vol. 1, 1873, p. 373.

<sup>b</sup> Raymond, R. W., *Trans. Am. Inst. Min. Eng.*, vol. 1, 1873, p. 374.

<sup>c</sup> The writer is indebted to Mr. S. F. Emmons for the note on tin in South Dakota.

<sup>d</sup> Dumble, E. T., *Second Ann. Rept. Texas Geol. Survey*, 1890, pp. 595, 690, 713.

has been found at another locality. At El Paso,<sup>a</sup> wolframite occurs with the ores, and feldspar is replaced by cassiterite.

In Virginia<sup>b</sup> good tin prospects have been found on the headwaters of Irish Creek, Rockbridge County, in quartz lenses and stringers in granite, which itself is intrusive in metamorphic schists. Associated minerals are wolframite, mispickel, iron pyrites, quartz, and beryl, with small amounts of siderite, limonite, chlorite, muscovite, damourite, and fluorspar.

In Wyoming,<sup>c</sup> at Nigger Hill, in the northwestern portion of the Black Hills, cassiterite has been found in a granitic area that is similar in geological association to that at the Etta mine.

#### CONDITIONS AND METHODS AT THE LARGE TIN MINES OF THE WORLD.

Since the tin from newly discovered sources must come into competition with the product of established mining districts, a comparison with the mining conditions in the older districts will be useful in estimating the value of the newer ones. For this purpose the following notes have been compiled from the most recent publications on the tin deposits of the world, and a brief bibliography of these is presented on pages 55-56.

The greater part of the world's supply of tin is obtained from alluvial deposits. Over three-fourths of it comes from alluvial deposits in the Malay Peninsula, otherwise known as the Straits Settlements, and the islands of Banca and Billiton, off the north coast of Sumatra, the former region producing about half of the tin of the world. A large amount is produced from alluvial deposits in Australia, while in Cornwall, Saxony, and Bolivia most of the tin ore is obtained from vein deposits in the bed rock.

#### MALAY PENINSULA.<sup>d</sup>

The Malay Peninsula, in which the Straits Settlements tin deposits are located, consists of a central axis of rugged hills running north and south, with occasional subordinate or diverging axes and isolated peaks. The whole region is covered by a jungle of tropical vegetation so dense that the roads and trails have to be hewn through. In the tin regions the main range is composed of granitic rocks, occasionally cut by feldspathic and other dikes, while in some places are found gneissic and schistose rocks, with occasional areas of a white, highly crystalline limestone.

Tin ore occurs in nearly every part of the western side of the Malay

<sup>a</sup> Weed, W. H., The El Paso tin deposits: Bull. U. S. Geol. Survey No. 178, 1901.

<sup>b</sup> Rolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1895, pp. 523-525.

<sup>c</sup> Rolker, C. M., cit., p. 530.

<sup>d</sup> The following notes regarding the Malay tin deposits are taken almost verbatim from R. A. F. Penrose, *Tin deposits of Malay Peninsula*: Jour. of Geol., vol. 11, 1903, pp. 135-154.

Peninsula for a distance of 900 miles, but the principal mining district is located about 300 miles northeast of Singapore, and is known as the Kinta district. The district comprises a more or less inclosed valley about 40 miles in length, extending in a north-south direction, about 30 miles in width at its south end and about 5 miles wide at its north end. The valley includes some lower mountains and areas of limestone, surrounded and partly covered with great tracts of alluvium. Much of this alluvium contains oxide of tin, or cassiterite, in particles and fragments of varying size, forming what might be termed "tin placers," in which the tin occurs in different ways. Sometimes it is scattered through it from top to bottom in comparatively uniform quantities; sometimes it is in layers or pay streaks separated by barren ground; sometimes it is richest on the bed rock. As a general rule, however, there is a covering or "overburden" of barren alluvium from 10 to 40 feet or more in thickness above the tin ground. The best ground occurs immediately at the foot of the mountains. Higher up it is often richer, but of small extent, while farther away it is thicker, but of lower grade. The ordinary tin-bearing beds vary from 1 to 30 feet in thickness, though sometimes they reach over 100 feet. In one instance the tin-bearing formations extend from the surface down to a depth of from 5 to 30 feet, without any barren overburden. In another instance large open pits in the alluvium of the river valley show tin-bearing strata, varying from 2 to 10 feet in thickness, with a barren overburden about 40 feet in thickness. In another instance the overburden is from 30 to almost 40 feet in thickness, and the tin-bearing ground below has been penetrated 140 feet vertically without reaching the bottom. In the mountains near its source the ore is angular and in comparatively large fragments, sometimes from an inch to a foot or more in diameter. Farther down the hill it becomes more and more rounded and finer in grain.

Most of the mines are operated by Chinamen, and the labor is performed by coolies from southern China. The tin-bearing alluvium is worked mostly in open cuts or large pits, except where the covering or overburden is very thick, when shafts are sunk to the tin stratum. The average depth of the working is about 40 feet, and the greater depth can not ordinarily be reached on account of water in the pits. It is a common thing to see water raised from these pits by a rude treadmill pump worked by the feet of Chinese laborers.

The pay gravel dug from the bottom of the pit is carried up an incline to the surface in baskets hung on either end of a stick carried on the back of a Chinaman. It is then dumped into wooden troughs, supplied with running water, and, if necessary, stirred with a shovel until washed into the sluice boxes. These boxes are from a few feet to several hundred feet in length, and are built of wood or cut in the sandy clay of the region. In the description of them no mention is



made of riffles being used. After running for some time, the water is shut off and the material in the boxes is cleaned up. This material is further concentrated by hand panning in flat wooden bowls, which resemble the American gold pan. The final process is cleaning by hand picking, by which the magnetic iron and other impurities are removed. Ore treated in this way will average from 60 to 70 per cent tin. In one instance hydraulic monitors are used, but the greater part of the tin ore from this region is produced by the more primitive methods.

#### BANCA.

In the island of Banca,<sup>a</sup> which is under the Dutch Government, the geological conditions resemble those of the Malay Peninsula. The bed rock consists of granite masses flanked by Silurian slates. Tin ore has been found occurring as impregnations in the granite and also as veins in the slate, but these deposits are not worked. The tin wash consists mainly of fragments of granite, "schorl,"<sup>b</sup> and sandstone. The bed rock nearly always consists of granite more or less decomposed. A section of an average stream-tin deposit shows above the bed rock 3 feet of tin-bearing gravel, overlain by red sand, followed by red clay, then coarse sand with pockets of clay, layers of fine sand with a little fine tin ore. The average overburden is from 25 to 35 feet; shallow diggings are prospected by pits, deeper ones by systematic borings. In 1891 and 1892, according to the United States Bureau of Statistics, 7,982 men were employed in the mines of Banca and produced 5,753 tons of tin, a yearly product per man of seventy-two one-hundredths of a ton. There is water for working in the lower valley diggings but eight months each year, and for only five months in the upper diggings.

#### BILLITON.

In Billiton, also under the Dutch Government, the geologic conditions resemble those in Banca. There are granite masses surrounded by quartzites, schists, and slates of Silurian age. Some tin is obtained from ledges that occur both in the granite and in the quartzite, but the greater part of the tin comes from alluvial deposits. In 1891-92 8,690 men were employed here, the output averaging per man a little over seven-tenths of a ton of tin. The prospecting is done very systematically, and is in charge of a corps of European engineers who test the fields in advance of the mining operations by boring first at intervals of, say, 100 yards, and supplementary holes are made from 20 to 25 yards apart to ascertain the course, average thickness, and

<sup>a</sup> Bolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1896, p. 484.

<sup>b</sup> "Schorl" is an old name for rocks composed mainly of tourmaline and quartz.

character of the pay gravel. The contents of each hole is carefully washed and the tin ore weighed, and from these results calculations as to the probable yield of the ground are made. On the basis of this estimate the fields are let to Chinamen.

#### AUSTRALIA.

In Australia tin ore has been found very widely distributed, and is mined in New South Wales, Queensland, South Australia, Tasmania, Victoria, and West Australia. The occurrences present considerable variety, and both alluvial and vein deposits have been worked, though the greater part of the tin is produced from alluvial deposits. The two best-known localities of stream tin are Vegetable Creek in New South Wales, and Bischoff Mountain in Tasmania.\* All the tin gravels of Vegetable Creek are derived from masses of granite that are permeated by numerous tin veins. The width of the channel deposits of this creek varies from 5 to 15 chains, or from 330 to 990 feet, but the richest portions are reported to be from 1 to 5 chains wide. The average thickness of the deposit is reported to be 7 feet, while the thickness of the pay gravel averages  $2\frac{1}{2}$  feet. The average yield per cubic yard of pay gravel is said to be about 20 pounds of tin ore, equal to about 0.8 per cent. In this district the mining is done by hydraulic monitors and other modern mining appliances.

The tin deposits of the Mount Bischoff region in Tasmania are largely residual gravels derived from decomposition in situ of the bed rock. The bed rock of this mountain consists of Paleozoic clay slates and quartz, and to a less extent of sandstones and dolomites. The slates are traversed by numerous veins of quartz-porphyry. The porphyry and also the slates have undergone great transformations, so that all of the original feldspar and mica, as well as the primary quartz, have been replaced by topaz, tourmaline, secondary quartz, tinstone, and to a less extent by fluorspar, arsenious pyrites, and magnetite. The gravels are sometimes astonishingly rich in tin. In one instance 240 tons of concentrated ore were taken from an area of 66 square feet. Masses containing 6 hundredweight, almost free from the matrix, have been found. The accumulation of tin ore in the gravel is exceedingly patchy, as might be expected in deposits of this nature. Frequently within 60 feet of the richest deposits the wash dirt is found to contain only traces of tin. The ore is first concentrated by sluicing, then crushed and further concentrated; 5,500,000 tons of material handled previous to 1899 is reported to have yielded 44,560 tons of black tin, or 0.81 per cent of the total material treated. The value of a ton of gravel probably averaged about 6s. 10d., or \$1.70. The total cost of mining, crushing, dressing, and bagging the concentrates amounted to 4s.  $2\frac{1}{2}$ d.,

\* Bolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1895, p. 497.

or about \$1.05 per ton, and the dressing and smelting was covered by a yield of 0.5 per cent tin oxide, equal to about 10 pounds of black tin per ton."

Nearly all the ore obtained in Tasmania is smelted at the Mount Bischoff Company's smelting works in Launcester, Tasmania.

#### CORNWALL.

The tin-bearing district of Cornwall<sup>b</sup> is at the extreme southern end of England and has a length of about 100 miles and a width of from 10 to 30 miles. The bed rock consists of metamorphosed clay slates, called "killas," of Devonian age, intruded by large masses of granite. Both the granite and the slates are cut by dikes of quartz-porphyry, called "elvan courses," whose outcrops form a fringe around the granite areas. Five granite areas of this kind are shown on geological maps of the region, while the Scilly Islands, about 20 miles to the southwest, form a sixth.

The tin gravels of Cornwall were exploited as early as Roman and Grecian times, when the British Islands were called Cassiterides. At present the original tin-bearing gravels have long been exhausted and abandoned. What is called "stream working" at the present day is merely the extraction of tinstone from the tailings of the stamp mills collected in the valley depression. In 1894 about 6 per cent of the total tin production of Cornwall came from the washing of these poor slimes.

The tin-bearing lodes of Cornwall have been worked for many years and afford the best examples of lode mining for comparison. These lodes occur in the granites, slates, or elvans, or in the contacts between them. Nearly all of the mineral wealth occurs within 2 or 3 miles on either side of the boundaries between the slates and the granite.

The granites, especially in their outer portions, are usually more or less altered, and the name greisen is often applied to them. Typical greisen consists principally of quartz and lithia mica, with tourmaline, zircon, topaz, fluorite, and cassiterite in small amounts. In some cases the rock consists very largely of tourmaline and quartz, with fluorite in varying quantities.

The common minerals associated in the veins with the cassiterite are quartz, feldspar, chlorite, and tourmaline, with fluorite, lepidolite, topaz, copper pyrites, and copper glance in varying proportions. Several of the mines have produced both copper and tin ores, and in some cases mines which were opened as copper mines have become tin mines in depth by a gradual increase in the amount of tin ore and corresponding decrease in copper ore.

<sup>a</sup> Rolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1895, p. 505, quoted from Min. Res. of Tasmania, Nov., 1894.

<sup>b</sup> De la Beche, H. T., Report on the geology of Cornwall, Devon, and West Somerset, with map: *Geol. Britain Geol. Survey*, London, 1839.

The metalliferous contents of the tin-bearing lodes appear to be affected not only by the mineral composition of the contiguous rocks, but also, in some degree, by their position and mechanical structure. Whether the rock be granite, slate, or elvan the hardest portions are always quartzose, and in these the lodes are seldom rich.

If, on the contrary, the grain of the rock be neither very fine on the one hand, nor particularly coarse on the other, while the inclosed crystals of feldspar have a greenish, brownish, or pinkish tint and indistinct outlines, quartz, mica, and sometimes schorl being present, the appearance of the rock is considered to be favorable, and lodes inclosed in it may be expected to be fairly productive, especially of tin ore.<sup>a</sup>

The lodes which afford lead ores occur in the slates, usually at some distance from the granite, while the lodes which cut both slate and granite, though they carry both tin and copper, are usually richer in copper where the walls are slate, and richer in tin where the walls are granite.

The walls of the tin-bearing veins are seldom well defined, and generally the ore is disseminated through the wall rock on one side or the other, so that at some distance away from the veins it is rich enough to work. This is especially common when the vein is inclosed in granite, but also happens in the slates and elvans.

All Cornish tin ores can not, however, be distinctly connected with veins. In some instances the deposits are stockworks which consist of a mass of granitic or other rock traversed by a network of small veins interlacing with one another and running through the rock in various directions. Other large deposits in Cornwall, known as "floors" or "carbonas,"<sup>b</sup> are usually connected with well-defined lodes, though in some cases they are surrounded by hard granite and apparently unconnected with any lode or vein. Enormous deposits of this kind have been found in the workings of the St. Ives Consols mine. The Standard lode at this place has been worked to a depth of nearly 200 fathoms and has in the aggregate been very productive, though it does not average more than  $4\frac{1}{2}$  feet in width. Several large carbonas have been found branching off from this lode at various levels, and many of the workings are in the form of enormous caverns from 60 to 75 feet high and equally wide.

The Dolcoath<sup>c</sup> mine is one of the best known of the Cornish tin mines, and in 1902 the lodes had been traced for over 2 miles, while the workings had reached a vertical depth of about 2,100 feet and were still producing large amounts of ore. The main lode of Dolcoath

<sup>a</sup> Phillips, J. A., and Louis, Henry, *A treatise on ore deposits*, Macmillan & Co., London, 1896, p. 108.

<sup>b</sup> Phillips, J. A., and Louis, Henry, *Idem*, p. 169.

<sup>c</sup> Frecheville, R. J., *Great main lode of Dolcoath*: *Trans. Royal Geol. Soc. Cornwall*, vol. 10, 1887, pp. 146-156.

varies in width from 12 inches to 27 feet and is richest in tin in the deepest levels, where the ores sometimes average 10 per cent cassiterite. The richest ore occurs where a number of veins intersect and is said to be of a compact, bluish rock, consisting of a mixture of chlorite, quartz, and tourmaline, with stringers of cassiterite running through it. On the north side it passes gradually into a barren granite. From its upper workings, which are in the slate, this mine yielded only copper ores, but from the deeper levels mined at the present time, which are in the granite, only tin ores are obtained.<sup>a</sup>

The average richness of the ore from a number of Cornish mines for ten years, from 1871 to 1881, is given in pounds of black tin per ton, as follows: Dolcoath, 59 pounds; Cook's Kitchen, 43 pounds; Tincroft, 53 pounds, and Carn Brea, 35 pounds.<sup>b</sup> This is approximately equivalent to 1.8 per cent, 1.3 per cent, 1.6 per cent, and 1 per cent, respectively, in metallic tin. During the half year ending December 31, 1902, the average product of the Dolcoath mine was 38.28 pounds black tin per ton, approximately equivalent to 1 per cent, while during the year ending April 24, 1903, the product of the Wheal Grenville Mining Company at Camborne averaged 43.6 pounds black tin per ton,<sup>c</sup> approximately equivalent to 1.1 per cent in metallic tin.

Many examples showing the nature of occurrence and extent of the tin ledges of Cornwall might be cited for comparison, but those given above will probably be sufficient for present purposes, and will show the general resemblance of the occurrence of tin ore in the York region and in Cornwall.

#### BOLIVIA.

The tin mines of Bolivia occur in veins that are regarded as exceptional in that the tin ore is intimately associated with silver ores, bismuth ores, and various sulphides, while the gangue includes barite and certain carbonates. The deposits often occur in trachytes and andesites erupted during Cretaceous or Eocene time.

#### REDUCTION OF TIN ORES.<sup>d</sup>

Tin ore is prepared for smelting by roasting, if necessary, then crushing and concentrating to at least 60 per cent cassiterite. This may be done with ordinary stamp mills and concentrating machinery. In Cornwall both gravity and steam stamps are used.

The earliest and simplest method of smelting was as follows: A hole, about 2 feet in diameter, was dug in the earth, preferably in a bank, in which sticks of wood and well-cleaned ore were piled in alternate

<sup>a</sup> Phillips, J. A., and Louis, Henry, *A treatise on ore deposits*, Macmillan Co., 1896, p. 211.

<sup>b</sup> Frecheville, R. J., *Great main lode of Dolcoath*: *Trans. Royal Geol. Soc. Cornwall*, vol. 10, 1887, p. 164.

<sup>c</sup> Newland, D. H., *Tin, the mineral industry*, vol. 11, 1903, p. 596.

<sup>d</sup> Louis, Henry, *The metallurgy of tin*: *Mineral Industry*, vol. 5, 1896, pp. 533 to 568.

layers and burned; the tin was thus reduced, dropping or flowing to the bottom of the hole. Remains of many such rude furnaces have been found in Cornwall. Afterwards, bellows were introduced to force the fire, and still later charcoal was added. In some parts of the Malay Peninsula small amounts of tin are produced by reducing in this manner, charcoal being used without artificial draft.

For a long while the shaft furnace was used, but it is now almost entirely superseded by the reverberatory furnace. An average furnace of this kind has about the following dimensions: Bed, 10 by 17 feet; fire bridge, 2 by 6 feet; space below fire arch, 3 feet, and below fire bridge, 15 inches. The bed of the furnace is built over a hollow vault and with the hollow fire bridge is cooled by allowing the air to circulate freely beneath it.

In Singapore water has been used below the bed to catch the tin that leaks through, since the metal is very fluid at the high temperature of the smelter.

The bed has a depth of about 6 inches and slopes from all three sides to the tap hole at one end. Opposite the tap hole is a charging door, and there are openings for working the charge at both ends of the furnace. The average charge is about 2 tons of concentrated ore, mixed with from 15 per cent to 20 per cent of powdered anthracite, a small amount of slaked lime, according to the quality of the ore, and sometimes a little fluorspar.

A good heat is raised and the charge kept in a reducing atmosphere at about the temperature of melting cast iron, and after several rabblings is drawn off at the end of from five to seven hours. At Penzance, Cornwall, 16 men working twelve-hour shifts run four such furnaces.

The tin from the reverberatory furnace must be refined, and after it is run into molds it is placed in a liquating furnace, an inclined table under which a fire is built, which raises the temperature just above the melting point of tin. The tin trickles slowly through the tap hole into the "float" or tank for the molten metal, leaving unmelted the more infusible substance in the form of "hardheads," which are alloys of tin with baser metals, such as copper and iron, and these are refined by other methods. The molten tin in the float is allowed to settle a few hours, after which wood is forced down beneath the molten mass, and the steam and gases formed create a strong ebullition. Bismuth, lead, arsenic, and other impurities, and some tin are oxidized and float as a scum on top and are skimmed off to be smelted again with the slags. The same result is accomplished by dipping up the tin in ladles and pouring it back from a height of 2 or 3 feet, but this involves more labor and seems to possess no advantage over boiling.

After boiling, the tin is allowed to settle for two or three hours, and then the uppermost part is ladled into molds and sold as refined tin,

the middle portion is sold as block tin, and the lowest portion must be further refined. Average English refined tin is from 98.64 to 99.76 per cent pure. The cost of refining tin in the Straits Settlements is said to be about \$12 per ton of 2,000 pounds. There is always some loss in smelting tin; slags from the furnace seldom contain less than 5 per cent, and the average loss in smelting is said to be about 9 per cent.

#### PRODUCTION AND VALUE OF TIN IN 1902-3.

During the years 1902 and 1903 the total world's production of tin is estimated at 90,233 and 92,536 long tons, respectively, as shown by the following table.<sup>a</sup>

*Production of tin, estimated on trade statistics.*

	Long tons.		Changes.	
	1902.	1903.	Increase.	Decrease.
Straits (Malay Peninsula) .....	54, 062	54, 797	735	.....
Australia.....	3, 500	4, 991	1, 491	.....
Banca .....	14, 978	15, 070	92	.....
Billiton .....	3, 951	3, 653	.....	298
Bolivia .....	9, 000	9, 500	500	.....
Cornwall, England.....	4, 392	4, 150	.....	242
Miscellaneous .....	350	375	25	.....
Total .....	90, 233	92, 536	2, 843	540
Net increase, 2,303 long tons.				

Of this total production only about 30 tons were mined in the United States.

The total consumption of tin in the United States approximated 39,000 tons, or 43 per cent of the world's output. The production of tin last year, as in fact for several years past, has hardly exceeded the consumption, and from some of the older districts, especially Banca and Billiton, there are signs of a diminution in the output. The average price of tin in New York for 1903 was 28.09 cents per pound, or about 1½ cents per pound higher than for 1902. The price varied during the year from 25.42 cents to 30.15 cents per pound. The total amount of tin consumed in the United States was worth at market prices over \$24,500,000.

#### VALUE OF TUNGSTEN AS A BY-PRODUCT.

Tungsten ores in the form of wolframite occur in association with the tin ores in several places in the York region. At present prices these ores in the York region evidently have no commercial value, but

<sup>a</sup>Tin in 1903, Eng. and Min. Jour., vol. 77, Jan. 7, 1904, pp. 18-20.

considering the difficulty which may arise in separating wolframite from cassiterite the following information will be of interest:<sup>a</sup>

Since the latter part of 1903 there has been a very large increase in the demand for tungsten, and it is probable that from October 1, 1903, to October 1, 1904, will see the marketing of about 1,000 tons of tungsten minerals. Where the tungsten mineral is an associate of some other economic mineral that is being mined it should be a valuable by-product. Its value varies with the percentage of tungsten oxide and has been about \$100 per ton for a 55 to 60 per cent ore. As an associate of tin ore it should be of value as a by-product, and could be separated from the tin mineral by an electro-magnetic separator.

As the demand for tungsten is limited there could readily be an overproduction, with a corresponding reduction in price.

#### BIBLIOGRAPHY.

The following are a few of the more important papers relating to the tin deposits in various parts of the world which may be useful for comparative purposes in estimating the value of the tin deposits of Alaska:

BECK (RICHARD). *Lehre von den Erzlagertstätten*, Berlin, 1901. Second edition, 1903.

Contains descriptions of the occurrence and method of mining tin ore, both in alluvial and in lode deposits, in various parts of the world, and discusses the origin of tin ore.

BLAKE (W. P.). Tin ore veins in the Black Hills, and columbite and tantalite in the Black Hills: *Trans. Am. Inst. Min. Eng.*, vol. 13, 1885, pp. 691-697.

Structure of the Etta vein; percentage of black tin in the ore; minerals associated with the ore; extent of the tin region.

CLAYPOLE (E. W.). The tin islands of the Northwest: *Am. Geol.*, vol. 9, 1892, pp. 228-236.

Describes the structural characteristics of the igneous and sedimentary rocks that form the Black Hills and the movements of elevation and subsidence that have occurred in the region. The cassiterite is confined to the granite veins, and is very finely and irregularly disseminated.

DAVID (T. W. E.). Geology of the Vegetable Creek tin-mining fields of New England district, New South Wales: *Geol. Surv. New South Wales*, 1887, pp. 4-169.

Minerals associated with tin ore; methods of mining stream tin; tin occurs both in recent gravels and in old channels covered by basalt flows; lodes from which the Vegetable Creek tin has been derived; average thickness, extent, and richness of the alluvial deposits.

EMMONS (S. F.). Geological distribution of the useful metals in the United States: *Trans. Am. Inst. Min. Eng.*, vol. 22, 1893, pp. 71-72.

Describes the geologic occurrence of tin in various parts of the United States.

FAIRBANKS (H. W.). The tin deposits at Temescal, southern California: *Am. Jour. Sci.*, 4th ser., vol. 4, pp. 39-42, 1897; *Min. and Sci. Press*, vol. 75, 1897, p. 362.

Describes the geologic features of the region and the occurrence of the vein system and the tin deposits.

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<sup>a</sup>Communicated to the author by Mr. Joseph Hyde Pratt.



- FRECHEVILLE (R. J.). Great main lode of Dolcoath: *Trans. Royal Geol. Soc. Cornwall*, vol. 10, 1887, pp. 146-156.  
Relation of tin lodes to older dikes; vein minerals—tourmaline, quartz, and mica; depth of workings; physical character of the rich tin ore; passing of tin ore into the granite wall; average richness of tin ore from a number of Cornish mines.
- HAISE (EDWARD). The occurrence of tin ore at Sain Alto, Zacatecas, with reference to similar deposits in San Luis Potosi and Durango, Mexico: *Trans. Am. Inst. Min. Eng.*, vol. 29, 1900, pp. 502-511, figs. 1-6.  
Describes the occurrence of the various ore bodies.
- HANKS (H. G.). Cassiterite: Fourth Annual Report of the State Mineralogist of California, 1884, pp. 115-123.  
Notes on tin ores from Temescal, Cal.
- HOFMAN (H. O.). Dry assay of tin ore: *Trans. Inst. Min. Eng.*, vol. 18, 1890, pp. 3-54.  
Describes an exhaustive series of experiments with the ores of the Black Hills to ascertain the best method of assaying tin ores.
- INGALLS (W. R.). The tin deposits of Durango, Mexico: *Trans. Am. Inst. Min. Eng.*, vol. 25, 1896, pp. 146-163.  
Presents a map of a portion of Mexico, showing the location of the tin-ore deposits, describes the general geologic features and the character and distribution of the ore bodies, and discusses their origin.
- KEMPTON (C. W.). The tin deposits of Durango, Mexico: *Trans. Am. Inst. Min. Eng.*, vol. 25, 1896, pp. 997-998.  
In discussion of paper on the same subject by W. R. Ingalls, mentions an occurrence of tin placers at Sain Alto, Zacatecas, Mexico.
- LOUIS (HENRY). Metallurgy of tin: *The Mineral Industry*, vol. 5, 1896, pp. 533-588.  
Methods of smelting tin; character of furnace lining, etc. Three stages in tin smelting: (1) reduction; (2) refining impure tin; (3) cleaning the slags.
- LOUIS (HENRY). Production of tin. Reprint of series of articles in the *Min. Jour.*, *Railway and Commercial Gazette*, 12 mo., 39 p. and map 3e., London, 1900.
- MINCHIN (J. B.). Tin in Bolivia: *The Mineral Industry*, vol. 11, 1902, pp. 588-590.  
Description of tin-producing district and tin-bearing lodes; methods of mining, transporting, and concentrating tin ores.
- OWENS (F.). A review of the tin industries of the Malay Peninsula up to the end of 1899: *The Mineral Industry*, vol. 9, 1901, pp. 646-656.
- PENROSE (R. A. F.). Tin deposits of the Malay Peninsula: *Jour. Geol.*, vol. 11, 1903, pp. 135-154.  
Geology of the Kinta district; description of tin placers; methods of mining and treating tin ores.
- PHILLIPS (J. A.) and LOUIS (HENRY). Treatise on ore deposits: *MacMillan & Co.*, London, 1896.  
Description of both alluvial and lode deposits of tin in various parts of the world, and discussion of the genesis of tin ore.
- PHILLIPS (WILLIAM). "On the veins of Cornwall," and "Oxide of tin." *Trans. Geol. Soc. London*, vol. 2, 1814, pp. 336-376.  
Standard authorities on the tin deposits of Cornwall.
- ROLKER (C. M.). The alluvial tin deposits of Siak, Sumatra: *Trans. Am. Inst. Min. Eng.*, vol. 20, 1892, pp. 50-84.  
Notes on the geology and the occurrence and methods of working tin-bearing gravels.
- ROLKER (C. M.). The production of tin in various parts of the world: *Sixteenth Ann. Rept. U. S. Geol. Survey*, pt. 3, 1895, pp. 458-538.  
Includes statistics of production in various countries, and notes on the occurrence of tin in Maine, Virginia, North Carolina, Alabama, Texas, South Dakota, and California.

ULKE (TITUS). A contribution to the geology of the Dakota tin mines: Eng. and Min. Jour., vol. 53, 1892, p. 547.

Includes a brief description of the Archean rocks in which tin occurs, the mineral species found, and a discussion as to the origin of the tin-bearing granites.

ULKE (TITUS). The occurrence of tin ore at Kings Mountain, North Carolina, and near Vesuvius, Virginia: Mineral Resources U. S. for 1893, U. S. Geol. Survey, 1894, pp. 178-182.

Describes the character of the country rock of the two localities, and the manner of occurrence of the tin ore.

WEED (W. H.). The El Paso tin deposits: Bull. U. S. Geol. Survey, No. 178, 1891. Description of occurrence of cassiterite in Texas.



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[Bulletin No. 229.]

The serial publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Professional Papers, (4) Bulletins, (5) Mineral Resources, (6) Water-Supply and Irrigation Papers, (7) Topographic Atlas of United States—folios and separate sheets thereof, (8) Geologic Atlas of United States—folios thereof. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists may be had on application.

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JUNE, 1904.

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DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

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A

GAZETTEER OF DELAWARE

BY

HENRY GANNETT



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904



## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., March 9, 1904.*

SIR: I have the honor to transmit herewith, for publication as a  
bulletin, a gazetteer of Delaware.

Very respectfully,

HENRY GANNETT,  
*Geographer.*

Hon. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*



# A GAZETTEER OF DELAWARE.

By HENRY GANNETT.

## GENERAL DESCRIPTION OF THE STATE.

Delaware is one of the Middle States, and borders upon Delaware Bay and the Atlantic Ocean between latitudes  $38^{\circ} 30'$  and  $39^{\circ} 45'$ , and between longitudes  $75^{\circ} 00'$  and  $75^{\circ} 50'$ . The east boundary of the State is Delaware Bay and the Atlantic Ocean. The south boundary is a line beginning at Cape Henlopen—as the name was originally applied—in latitude  $38^{\circ} 27'$ , and running due west 34 miles 309 perches. The west boundary is a straight line, commencing at the westernmost point on the southern boundary and running northward 81 miles 78 chains and 30 links until it touches and makes a tangent to the western periphery of a circle with a radius of 12 statute miles from the center of the town of Newcastle. The north boundary is the periphery of this circle as far as Delaware River.

Delaware was first settled by the Dutch in 1629. In 1638 the Swedes made a settlement and held the colony until 1655, when it was surrendered to the Dutch. In 1664 this region, with the other Dutch possessions, was acquired by the Duke of York. In 1682 this territory passed from the Duke of York to William Penn by deed, and was held by him until 1701, when he granted it a charter enabling its people to set up a separate government. Delaware is one of the thirteen original States, and was the first to adopt the Constitution, taking this step December 7, 1787.

The population of the State in 1900 was 184,735. The following table gives the population at each census since 1790:

### *Population of Delaware at each census since 1790.*

1790.....	59,096
1800.....	64,273
1810.....	72,674
1820.....	72,749
1830.....	76,748
1840.....	78,085
1850.....	91,532
1860.....	112,216
1870.....	125,015
1880.....	146,608
1890.....	168,493
1900.....	184,735



The density of population in 1900 was 94.3 inhabitants to a square mile. The chief city is Wilmington, with a population of 76,508 in 1900; the capital is Dover, with a population of 3,329 in 1900. The urban population in 1900 amounted to about 54 per cent. As to sexes, the population is divided in the proportion of 51 males to 49 females. The State contains 30,697 negroes, five-sixths of the population being white, while one-sixth is colored. The proportion of foreign born is small, only 7.5 per cent of the inhabitants being foreign born, to 92.5 per cent native born.

Of the total population 10 years of age and over, 12 per cent were unable to read and write. This illiteracy was, however, found mainly among negroes. The illiterate element of the whites consisted of only 7 per cent of the whole number, while that of the negroes constituted 38 per cent. Of the total population over 15 years of age, 36 per cent were single, 55 per cent married, 8 per cent widowed, and 0.2 per cent divorced.

Of the entire number of inhabitants over 10 years of age, almost exactly one-half were engaged in gainful occupations. Of the males not less than 81 per cent were wage-earners, and of the females 18 per cent. The wage-earners were distributed in the following proportions among the five grand divisions of occupations:

<i>Proportions of wage-earners in Delaware in 1900.</i>		Per cent.
Agriculture .....		26
Professions .....		4
Domestic and personal service .....		23
Trade and transportation .....		16
Manufacturing .....		31

In 1900 there were 9,687 farms in the State, of which more than nine-tenths were operated by white farmers. Of the entire number of farms, just one-half were operated by their owners and the other half by tenants. The area of land in farms was 1,066,228 acres, of which 754,910 acres were improved. The average size of the farms was 110 acres, which is considerably less than the average of the country. The improved area amounted to 71 per cent of the total farm area and 60 per cent of the total area of the State. The value of all the farm property was \$40,697,654, of which \$34,436,040 consisted of land and buildings, \$2,150,560 of farm implements and machinery, and \$4,111,054 of live stock. The farm products were valued at \$9,290,777. The average value per farm of all farm property was \$4,201, and the value of products per farm was \$959. The following table gives the number of animals upon farms:

*Animals on farms in Delaware in 1900.*

Meat cattle .....	54, 180
Horses .....	29, 722
Mules .....	4, 745
Sheep .....	11, 765
Swine .....	46, 732

The following table gives the amounts of farm products in 1900:

*Farm products of Delaware in 1900.*

Corn .....	bushels..	4, 736, 580
Wheat .....	do.....	1, 870, 570
Oats .....	do.....	131, 960
Hay and other forage.....	tons.....	128, 193
Potatoes .....	bushels..	414, 610
Sweet potatoes.....	do.....	222, 165
Dairy products.....		\$1, 092, 807

The total number of manufacturing establishments in the State in 1900 was 1,417, with a total capital of \$41,203,239 and 22,303 employees. The wages paid annually amounted to \$9,259,661, the value of materials to \$26,652,601, and the value of products to \$45,387,630.

## GAZETTEER.

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- Angola;** post village in Sussex County near the coast.
- Appoquinimink;** small creek in Newcastle County, which flows eastward into Delaware Bay.
- Argo;** post village in Sussex County.
- Armstrong;** railroad station in Newcastle County on Philadelphia, Baltimore and Washington Railroad.
- Ashland;** post village in Newcastle County on the Baltimore and Ohio Railroad.
- Bacons;** post village in Sussex County.
- Bayard;** post village in Sussex County.
- Bayville;** post village in Sussex County.
- Bear;** post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Beaver valley;** small town in Newcastle County, near Wilmington.
- Bellevue;** post village in Newcastle County on Delaware River and on the Philadelphia, Baltimore and Washington Railroad.
- Berrytown;** village in Kent County.
- Bethel;** post village in Sussex County.
- Bingham;** station in Kent County on the Baltimore and Delaware Bay Railroad.
- Blackbird;** creek, a small left-hand branch of Duck Creek, a tributary of Delaware River.
- Blackbird;** post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Blackistone;** village in Kent County.
- Blackwater;** village in Sussex County.
- Blades;** post village in Sussex County.
- Blanchard;** post village in Sussex County on the Queen Anne's Railroad.
- Bombay;** hook, a point in Kent County projecting into Delaware Bay.
- Bombay Hook;** island in Kent County; it has Delaware Bay on the east, and is divided from the mainland by Duck Creek.
- Bowers;** village in Kent County.
- Brandywine;** post village in Newcastle County in the northernmost hundred in the State.
- Brenford;** post village in Kent County, 8 miles north of Dover, on the Philadelphia, Baltimore and Washington Railroad.
- Bridgeville;** town in Sussex County, near Nanticoke River, on the Philadelphia, Baltimore and Washington Railroad. Population, 613.
- Broad;** creek, a small left-hand tributary to Nanticoke River.
- Broad Kiln;** small creek in Sussex County flowing into Delaware Bay.
- Brownsville;** village in Kent County.
- Bunting;** post village in Sussex County.
- Camden;** town in Kent County, near Dover. Population, 536.

- Cannon**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Canterbury**; village in Kent County near Dover.
- Carpenter**; post village in Newcastle County on the Baltimore and Ohio Railroad.
- Carrcroft**; post village in Newcastle County on the Baltimore and Ohio Railroad.
- Cedar**; creek, rising in Sussex County and flowing east into Delaware Bay.
- Cedar**; island at entrance of Rehoboth Bay.
- Cedar Creek**; village in Sussex County.
- Centerville**; post village in Newcastle County near Wilmington.
- Chambersville**; village in Newcastle County.
- Chestnut**; hill in Newcastle County. Elevation, 280 feet.
- Cheswold**; town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 201.
- Choate**; post village in Newcastle County.
- Christiana**; creek, formed by Red Clay and White Clay creeks, which unite in Newcastle County. It runs northeastward and enters Delaware River about 2 miles below Wilmington.
- Christiana**; post village in Newcastle County.
- Clark**; point in Kent County projecting into Delaware Bay.
- Clarksville**; post village in Sussex County.
- Claymont**; post village in Newcastle County on Delaware River and on the Philadelphia, Baltimore and Washington Railroad.
- Clayton**; town in Kent County on Duck Creek on the Philadelphia, Baltimore and Washington Railroad. Population, 819.
- Columbia**; post village in Sussex County.
- Concord**; town in Newcastle County on the Baltimore and Ohio Railroad.
- Concord**; post village in Sussex County near Nanticoke River.
- Coochs Bridge**; post village near Delaware City in Newcastle County, known as Cooch, on the Philadelphia, Baltimore and Washington Railroad.
- Coolspring**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Coopers Corners**; village in Kent County.
- Corbit**; station in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Cowgill**; village in Kent County.
- Cowmarsh**; ditch, branch of Chotank River in Kent County.
- Cranberry**; branch, a tributary to Delaware Bay in Kent County.
- Dagsboro**; town in Sussex County on the Philadelphia, Baltimore and Washington Railroad. Population, 190.
- Deakynesville**; village in Newcastle County.
- Deep**; creek, a head fork of Nanticoke River in Sussex County.
- Deepwater**; marshy point in Kent County projecting into Delaware Bay.
- Delaney**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Delaware**; bay, an inlet of the sea, or an estuary, through which Delaware River enters the Atlantic Ocean. The entrance of the bay, which is between Cape May and Cape Henlopen, is about 13 miles wide and its length is about 55 miles.
- Delaware**; river, formed by two branches sometimes called the Coquago and the Popacton, which rise in New York near the northeastern border of Delaware County and unite at Hancock in the same county. From this point it runs southeastward, forming the boundary between New York and Pennsylvania, until it reaches Port Jervis and touches the northern extremity of New Jersey. Here Kittatinny Mountain causes it to change its course and run southwestward along the base of that ridge to the Delaware Water Gap near Stroudsburg. About

40 miles below Philadelphia it expands into an estuary called Delaware Bay. This river forms the entire boundary between New Jersey and Pennsylvania. The length of the main stream is estimated to be about 280 miles; the mean discharge, 18,619 second-feet at Lambertville, N. J.; navigable to Trenton. Drainage area, 12,012 square miles.

**Delaware City**; city in Newcastle County on the Philadelphia, Baltimore and Washington Railroad, situated on Delaware River where it merges into Delaware Bay, about 12 miles southwest of Wilmington. Population, 1,132.

**Delmar**; town in Sussex County on the New York, Philadelphia and Norfolk and the Philadelphia, Baltimore and Washington railroads. Population, 444.

**Dover**; town and county seat of Kent County, situated on St. Jones Creek and on the Philadelphia, Baltimore and Washington Railroad, about 6 miles west of Delaware Bay.

**Downs Chapel**; post village in Kent County.

**Drawbridge**; post village in Sussex County near Delaware Bay.

**Drawyer**; creek, a small tributary to Delaware Bay in Newcastle County.

**Duck**; creek, forms the boundary between Kent and Newcastle counties and empties into Delaware Bay.

**Dupont**; station in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Dyke**; branch, a tributary to Delaware Bay in Kent County.

**Eagles Nest**; landing on Smyrna River on boundary between Newcastle and Kent counties.

**Edgemoor**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad about 3 miles from Wilmington.

**Edwardsville**; village in Kent County.

**Ellendale**; post village in Sussex County on the Philadelphia, Baltimore and Washington and the Queen Anne's railroads.

**Elsmere**; post village in Newcastle County on the Baltimore and Ohio Railroad.

**Fairmont**; post village in Sussex County.

**Farmington**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Farnhurst**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Faulkland**; post village in Newcastle County on the Baltimore and Ohio Railroad.

**Felton**; town and post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Fennimore**; landing on Appoquinimink Creek in Newcastle County.

**Fieldsboro**; village in Newcastle County.

**Forest**; post village in Newcastle County.

**Frankford**; town in Sussex County on the Philadelphia, Baltimore and Washington Railroad.

**Frederica**; town in Kent County on Murderkill Creek. Population, 706.

**Georgetown**; town and county seat of Sussex County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,658.

**Glasgow**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Goose**; marshy point in Kent County projecting into Delaware Bay.

**Granogue**; post village in Newcastle County on the Philadelphia and Reading Railway.

**Gravelly Branch**; creek, a head branch of Nanticoke River in Sussex County.

**Green**; branch of Smyrna River in Kent County.

**Green Spring**; village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

- Greenville**; post village in Newcastle County on the Philadelphia and Reading Railway.
- Greenwood**; post village in Sussex County on the Philadelphia, Baltimore and Washington and the Queen Anne's railroads.
- Grubbs**; post village in Newcastle County.
- Gumboro**; post village in Sussex County.
- Guyencourt**; post village in Newcastle County on the Philadelphia and Reading Railway.
- Hangmans Run**; a small tributary to Delaware Bay in Newcastle County.
- Harbeson**; post village in Sussex County, known as Broadkill, on the Philadelphia, Baltimore and Washington Railroad.
- Harrington**; town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,242.
- Hartly**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Haslettsville**; village in Kent County.
- Henlopen**; cape on the eastern coast of Delaware at the entrance of Delaware Bay.
- Henry Clay Factory**; post village in Newcastle County.
- Herring**; small creek rising in Sussex County and flowing east into Rehoboth Bay.
- Hickman**; post village in Kent County on the Queen Anne's Railroad.
- Hockessin**; post village in Newcastle County.
- Hollandville**; village in Kent County.
- Hollyoak**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Hollyville**; post village in Sussex County.
- Houston Station**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Indian**; river of Sussex County flowing eastward into the Atlantic Ocean.
- Iron**; hill in Newcastle County. Altitude, 340 feet.
- Isaac**; branch of St. Jones Creek in Kent County.
- Keeney**; station in Newcastle County on Philadelphia, Baltimore and Washington Railroad.
- Kelleys**; small island in Delaware Bay near the coast.
- Kent**; county, situated in the central part of the State, bounded on the east by Delaware Bay and drained by Choptank River and Duck and Mispillion creeks. The surface is extensively covered with forests. The soil is mostly fertile; area, 615 square miles; population, 32,762; white, 25,017; negro, 7,738; foreign born, 626; county seat, Dover. The mean magnetic declination in 1900 was 6° 30'; the mean annual rainfall about 45 inches, and the mean annual temperature, about 50°. The county is traversed by the Philadelphia, Baltimore and Washington Railroad.
- Kenton**; town and post village in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 192.
- Kirkwood**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Knowles**; post village in Sussex County.
- Lambs**; village in Sussex County.
- Laurel**; town in Sussex County on the Philadelphia, Baltimore and Washington Railroad. Population, 825.
- Lebanon**; village in Kent County.
- Leipsic**; town in Kent County. Population, 305.
- Lewes**; creek, a very small branch rising in Sussex County and flowing north into Delaware Bay.

- Lewes**; town in Sussex County on the Philadelphia, Baltimore and Washington and the Queen Anne's railroads. Population, 2,259.
- Lincoln**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Lisbon**; point in Newcastle County projecting into Delaware Bay.
- Little**; creek rising in Kent County and emptying into Delaware Bay.
- Little Bombay Hook**; small marshy island in Delaware Bay in Kent County near mouth of Delaware River.
- Littlecreek**; town in Kent County. Population, 259.
- Little Duck**; creek, a tributary to Delaware Bay in Kent County.
- Love**; creek, rises in Sussex County and empties into Rehoboth Bay.
- Lowes Crossroads**; village in Sussex County.
- McClellandsville**; post village in Newcastle County.
- McDonough**; post village in Newcastle County.
- Magnolia**; town in Kent County. Population, 208.
- Marshallton**; post village in Newcastle County on the Baltimore and Ohio Railroad.
- Marydel**; village on boundary line between Delaware and Maryland on the Philadelphia, Baltimore and Washington Railroad.
- Masten**; village in Kent County.
- Middle**; creek, a small right-hand tributary to Indian River in Sussex County.
- Middleford**; post village in Sussex County on Nanticoke River.
- Middletown**; town in Newcastle County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,567.
- Midway**; post village in Sussex County.
- Milford**; town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 2,500.
- Mill**; creek, a branch of Smyrna River in Kent County.
- Millsboro**; town in Sussex County on the Philadelphia, Baltimore and Washington Railroad. Population, 391.
- Millville**; post village in Sussex County.
- Milton**; town in Sussex County on the Queen Anne's Railroad. Population, 948.
- Mispillion**; small creek forming the boundary between Sussex and Kent counties and flowing into Delaware Bay.
- Mission**; village in Sussex County.
- Montchanin**; post village in Newcastle County on the Philadelphia and Reading Railway.
- Morris**; branch of Smyrna River in Newcastle County.
- Mount Cuba**; post village in Newcastle County on the Baltimore and Ohio Railroad.
- Mount Pleasant**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Mudstone**; branch of St. Jones Creek in Kent County.
- Murder Hill**; small creek rising in Kent County and flowing into Delaware Bay.
- Nanticoke**; river, rises in Sussex County and runs southwestward into Maryland, where it forms the boundary between the counties of Dorchester and Wicomico, and enters Chesapeake Bay at the western extremity of the latter county. Length, 75 miles.
- Nassau**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Newark**; town in Newcastle County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads. Population, 1,213.
- Newcastle**; city in Newcastle County on the Philadelphia, Baltimore and Washington Railroad, situated on the Delaware River. Population, 3,380.
- Newcastle**; county, the most northern of the State, bordering on Pennsylvania. It is bounded on the east by Delaware River and Bay and is drained by Brandy-

wine, Christiana, Red Clay, and Duck creeks. The surface is undulating; the soil is fertile. Area, 434 square miles. Population, 109,697; white, 93,454; negro, 16,197; foreign born, 12,916. County seat, Wilmington. The mean magnetic declination in 1900 was  $6^{\circ} 05'$ ; the mean annual rainfall, 45 inches; and the temperature,  $50^{\circ} 00'$ . The county is traversed by the Baltimore and Ohio, the Philadelphia and Reading, and the Philadelphia, Baltimore and Washington railroads.

**Newport**; town in Newcastle County on Christiana Creek and on the Philadelphia, Baltimore and Washington Railroad.

**Northwest**; branch of Smyrna River in Newcastle County.

**Noxontown**; pond on headwaters of Appoquinimink Creek in Newcastle County.

**Oakel**; village in Sussex County.

**Oakgrove**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.

**Oakley**; post village in Sussex County on the Queen Anne's Railroad.

**Oceanview**; post village in Sussex County near the ocean.

**Odessa**; town in Newcastle County on Appoquinimink Creek.

**Omar**; post village in Sussex County.

**Overbrook**; post village in Sussex County on the Queen Anne's Railroad.

**Owens**; post village in Sussex County on the Queen Anne's Railroad.

**Pearson**; village in Kent County.

**Pepper**; small creek emptying into Indian Bay in Sussex County.

**Pepper**; village in Sussex County.

**Petersburg**; village in Kent County.

**Porter**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Port Mahon**; landing on shore of Delaware Bay in Kent County.

**Port Penn**; town in Newcastle County. Population, 304.

**Price Corners**; village in Newcastle County.

**Prime Hook**; creek, rising in Sussex County and emptying into Delaware Bay.

**Providence**; creek, a branch of Smyrna River in Newcastle County.

**Puncheon**; branch of St. Jones Creek in Kent County.

**Ralph**; post village in Sussex County.

**Redden**; post village in Sussex County on Philadelphia, Baltimore and Washington Railroad.

**Red Lion**; creek, a very small right-hand branch of Delaware River in Newcastle County.

**Redlion**; post village in Newcastle County.

**Reedy**; island at head of Delaware Bay.

**Behoboth**; bay, on the coast about 10 miles south of Cape Henlopen, separated from the Atlantic Ocean by a narrow peninsula. It connects on the south with Indian River Bay.

**Behoboth**; town in Sussex County on the Philadelphia, Baltimore and Washington and the Queen Anne's railroads. Population, 198.

**Reybold**; station in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Risingsun**; village in Kent County.

**Robbins**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.

**Robinsonville**; post village in Sussex County.

**Rockland**; post village in Newcastle County on Brandywine Creek.

**Roxana**; post village in Sussex County.

**St. Georges**; town in Newcastle County. Population, 325.

**St. Johns Branch**; river, one of the small head branches of Nanticoke River.



- St. Jones;** creek, a small right-hand tributary to Delaware Bay in Kent County.
- Sandtown;** village in Kent County.
- Sandy;** point in Kent County projecting into Delaware Bay.
- Scotts;** village in Sussex County.
- Seaford;** town in Sussex County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,724.
- Selbyville;** post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Seven Hickories;** village in Kent County.
- Sewell;** branch of Chester River in Kent County.
- Sheals Branch;** small head branch of Indian River, rising in Sussex County.
- Shortly;** village in Sussex County.
- Shorts;** landing on Smyrna River on boundary between Newcastle and Kent counties.
- Slaughter;** village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Silver Run;** small stream in Newcastle county tributary to Delaware Bay.
- Smith;** post village in Sussex County.
- Smyrna;** river, tributary to Delaware Bay on boundary between Newcastle and Kent counties.
- Smyrna;** town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 2,168.
- Southwood;** station in Newcastle County on the Baltimore and Ohio Railroad.
- Spring;** creek, a tributary to Delaware Bay in Kent County.
- Stanton;** post village in Newcastle County, near Christiana Creek, on the Philadelphia, Baltimore and Washington and the Baltimore and Ohio railroads.
- Stateroad;** post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Stockley;** post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Summit Bridge;** post village in Newcastle County on the Chesapeake and Delaware Canal.
- Sussex;** southernmost county, bordering on Maryland. It is bounded on the east by Delaware Bay and the Atlantic Ocean, and is drained by Nanticoke and Indian rivers and by Mispillion and other creeks. The surface is nearly level, and a large part of it is covered with forests. The soil is mostly fertile; area, 911 square miles. Population, 42,276; white, 35,504; negro, 6,762; foreign born, 268. County seat, Georgetown. The mean magnetic declination in 1900 was 5° 45'; the mean annual rainfall, 45 inches; and the temperature 50°. The county is traversed by the Philadelphia, Baltimore and Washington and the Queen Anne's railroads.
- Sycamore;** post village in Sussex County.
- Talleyville;** post village in Newcastle County.
- Tanners Branch;** river, a small left-hand tributary to Choptank River, rising in Kent County.
- Taylors Bridge;** post village in Newcastle County.
- Thomas Corners;** village in Newcastle County.
- Thompson;** post village in Newcastle County on the Pennsylvania Railroad.
- Thompsonville;** village in Kent County.
- Thoroughfare;** neck of land lying between Cedar Swamp and Smyrna River in Newcastle County.
- Tidbury;** creek, a branch of St. Jones Creek in Kent County.
- Townsend;** town in Newcastle County on the Philadelphia, Baltimore and Washington Railroad. Population, 399.

**Trinity;** post village in Sussex County.

**Union;** village in Newcastle County.

**Vance;** neck of land lying between Silver River and Drawyer Creek in Newcastle County.

**Vandyke;** village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Viola;** post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Walker;** village in Newcastle County.

**Waples;** post village in Sussex County.

**Ward;** village in Sussex County.

**Warwick;** post village in Sussex County.

**Westville;** village in Kent County.

**Whitesboro;** post village in Sussex County on the Queen Anne's Railroad.

**Whitesville;** post village in Sussex County.

**Wildcat;** branch, a tributary to Choptank River in Kent County.

**Williamsville;** post village in Sussex County.

**Willowgrove;** village in Kent County.

**Wilmington;** city and county seat of Newcastle County. Population, 76,508. It is the port of entry, situated on the Delaware River and on the Brandywine and Christiana creeks which unite one-half mile from the river. It is on the Philadelphia, Baltimore and Washington, the Philadelphia and Reading, and the Baltimore and Ohio railroads.

**Winterthur;** post village in Newcastle County on the Philadelphia and Reading Railway.

**Wooddale;** post village in Newcastle County on the Baltimore and Ohio Railroad.

**Woodland;** post village in Sussex County.

**Woodside;** post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Wyoming;** town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 450.

**Yorklyn;** post village in Newcastle County on the Baltimore and Ohio.



## PUBLICATIONS OF UNITED STATES GEOLOGICAL SURVEY.

[Bulletin No. 230.]

The publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Professional Papers, (4) Bulletins, (5) Mineral Resources, (6) Water-Supply and Irrigation Papers, (7) Topographic Atlas of United States—folios and separate sheets thereof, (8) Geologic Atlas of United States—folios thereof. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists may be had on application.

The Professional Papers, Bulletins, and Water-Supply Papers treat of a variety of subjects, and the total number issued is large. They have therefore been classified into the following series: A, Economic geology; B, Descriptive geology; C, Systematic geology and paleontology; D, Petrography and mineralogy; E, Chemistry and physics; F, Geography; G, Miscellaneous; H, Forestry; I, Irrigation; J, Water storage; K, Pumping water; L, Quality of water; M, General hydrographic investigations; N, Water power; O, Underground waters; P, Hydrographic progress reports. This bulletin is the thirty-eighth in Series F, the complete list of which follows (all are bulletins thus far):

### SERIES F, GEOGRAPHY.

5. Dictionary of altitudes in United States, by Henry Gannett. 1884. 325 pp. (Out of stock; see Bulletin 160.)
6. Elevations in Dominion of Canada, by J. W. Spencer. 1884. 43 pp. (Out of stock.)
13. Boundaries of United States and of the several States and Territories, with historical sketch of territorial changes, by Henry Gannett. 1885. 135 pp. (Out of stock; see Bulletin 171.)
48. On form and position of sea level, by R. S. Woodward. 1888. 88 pp. (Out of stock.)
49. Latitudes and longitudes of certain points in Missouri, Kansas, and New Mexico, by R. S. Woodward. 1889. 133 pp.
50. Formulas and tables to facilitate the construction and use of maps, by R. S. Woodward. 1889. 124 pp. (Out of stock.)
70. Report on astronomical work of 1889 and 1890, by R. S. Woodward. 1890. 79 pp.
72. Altitudes between Lake Superior and Rocky Mountains, by Warren Upham. 1891. 229 pp.
76. Dictionary of altitudes in United States (second edition), by Henry Gannett. 1891. 393 pp. (Out of stock; see Bulletin 160.)
115. Geographic dictionary of Rhode Island, by Henry Gannett. 1894. 31 pp.
116. Geographic dictionary of Massachusetts, by Henry Gannett. 1894. 126 pp.
117. Geographic dictionary of Connecticut, by Henry Gannett. 1894. 67 pp.
118. Geographic dictionary of New Jersey, by Henry Gannett. 1894. 131 pp.
122. Results of primary triangulation, by Henry Gannett. 1894. 412 pp., 17 pls. (Out of stock.)
123. Dictionary of geographic positions, by Henry Gannett. 1895. 183 pp., 1 map. (Out of stock.)
154. Gazetteer of Kansas, by Henry Gannett. 1898. 246 pp., 6 pls.
160. Dictionary of altitudes in United States (third edition), by Henry Gannett. 1899. 775 pp. (Out of stock.)
166. Gazetteer of Utah, by Henry Gannett. 1900. 43 pp., 1 map.
169. Altitudes in Alaska, by Henry Gannett. 1900. 13 pp.
170. Survey of boundary line between Idaho and Montana from international boundary to crest of Bitterroot Mountains, by R. U. Goode. 1900. 67 pp., 14 pls.
171. Boundaries of United States and of the several States and Territories, with outline of history of all important changes of territory (second edition), by Henry Gannett. 1900. 142 pp., 53 pls. (Out of stock; see Bulletin 225.)
174. Survey of northwestern boundary of United States, 1857-1861, by Marcus Baker. 1900. 78 pp., 1 pl.
175. Triangulation and spirit leveling in Indian Territory, by C. H. Fitch. 1900. 141 pp., 1 pl.
181. Results of primary triangulation and primary traverse, fiscal year 1900-01, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1901. 240 pp., 1 map.
183. Gazetteer of Porto Rico, by Henry Gannett. 1901. 51 pp.

## II

## PUBLICATIONS U. S. GEOLOGICAL SURVEY.

185. Results of spirit leveling, fiscal year 1900-01, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1901. 219 pp.
187. Geographic dictionary of Alaska, by Marcus Baker. 1901. 446 pp. (Out of stock.)
190. Gazetteer of Texas, by Henry Gannett. 1902. 162 pp., 8 pls. (Out of stock.)
192. Gazetteer of Cuba, by Henry Gannett. 1902. 118 pp., 8 pls. (Out of stock.)
194. Northwest boundary of Texas, by Marcus Baker. 1902. 51 pp., 1 pl.
196. Topographic development of the Klamath Mountains, by J. S. Diller. 1902. 69 pp., 13 pls.
197. The origin of certain place names in the United States, by Henry Gannett. 1902. 280 pp. (Out of stock.)
201. Results of primary triangulation and primary traverse, fiscal year 1901-02, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1902. 164 pp., 1 pl.
214. Geographic tables and formulas, compiled by S. S. Gannett. 1903. 284 pp.
216. Results of primary triangulation and primary traverse, fiscal year 1902-03, by S. S. Gannett. 1903. 222 pp., 1 pl.
224. Gazetteer of Texas (second edition), by Henry Gannett. 1904. 177 pp., 7 pls.
226. Boundaries of the United States and of the several States and Territories, with an outline of the history of all important changes of territory (third edition), by Henry Gannett. 1904. 145 pp., 54 pls.
230. Gazetteer of Delaware, by Henry Gannett. 1904. 15 pp.

Correspondence should be addressed to

The DIRECTOR,  
UNITED STATES GEOLOGICAL SURVEY,  
WASHINGTON, D. C.

JUNE, 1904.

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Washington, Gov't print. off., 1904.  
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Subject series F, Geography, 38.

### Gannett, Henry.

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### U. S. Geological survey.

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no. 230. Gannett, Henry. A gazetteer of Delaware.  
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Bulletin No. 231

Series F, Geography, 39

DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY  
CHARLES D. WALCOTT, DIRECTOR

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A

# GAZETTEER OF MARYLAND

BY

HENRY GANNETT



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904





## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., March 9, 1904.*

SIR: I have the honor to transmit herewith, for publication as a  
bulletin, a gazetteer of Maryland.

Very respectfully,

HENRY GANNETT,  
*Geographer.*

Hon. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*



# A GAZETTEER OF MARYLAND.

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By HENRY GANNETT.

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## GENERAL DESCRIPTION OF THE STATE.

Maryland is one of the Eastern States, bordering on the Atlantic Ocean, about midway between the northern and southern boundaries of the country. It lies between latitudes  $37^{\circ} 53'$  and  $39^{\circ} 44'$ , and between longitudes  $75^{\circ} 04'$  and  $79^{\circ} 33'$ . Its neighbors are Pennsylvania on the north, West Virginia and Virginia on the west and south, and Delaware on the east. Its north boundary is Mason and Dixon's line, and its east boundary is, in part, a nearly north-south line separating it from Delaware and Pennsylvania, and, in part, the Atlantic Ocean. On the south the boundary is an irregular line across the peninsula separating Chesapeake Bay from the Atlantic Ocean; then across Chesapeake Bay to the southern point of the entrance to Potomac River; thence following the low-water line on the south bank of the Potomac to the head of the north branch of that river, at a point known as Fairfax Stone, excepting the area of the District of Columbia. The west boundary is a meridian drawn through Fairfax Stone northward to Mason and Dixon's line.

The gross area of the State, including that part of Chesapeake Bay in its borders, the broad estuaries at the mouths of the rivers, and the lagoons on the Atlantic coast, is 12,210 square miles, of which 9,860 square miles are land area.

The topography of the State is extremely varied, ranging from level lands, but slightly elevated above the sea, to mountains and plateaus in the western part of the State, 3,000 feet in altitude. The peninsula east of Chesapeake Bay and a narrow strip west of that body of water constitute what is known as the Coastal Plain. This has an area of 5,000 square miles, or more than one-half of the land area of the State. The peninsula is very low and level, nowhere rising 100 feet above tide, and much of it, especially near the shore of the Atlantic Ocean and Chesapeake Bay, is marshy. The Atlantic coast is bordered by sand bars, including broad lagoons of shallow water on their

landward side. On the west side of Chesapeake Bay the Coastal Plain reaches an altitude of 300 feet in places, and shows much relief. Of the twenty-three counties of the State, the following are comprised in the Coastal Plain: Worcester, Somerset, Wicomico, Dorchester, Caroline, Talbot, Queen Anne, Kent, and Cecil, on the peninsula, and Prince George, Charles, Calvert, St. Mary, and Anne Arundel west of Chesapeake Bay.

Along a line running through Havre de Grace, Baltimore, and Washington the granitic rocks rise to the surface. This is called the "fall line," from the fact that streams have rapids or falls where they flow across the first hard ledges. West of this line granite or allied rocks predominate, while east of it, on the Coastal Plain, are soft Cretaceous and Tertiary formations. This region extends from the fall line to the Blue Ridge and has an area of about 2,500 square miles. It is known as the Piedmont Plateau and comprises the following counties: Montgomery, Howard, Baltimore, Harford, Carroll, and Frederick. This region presents much more relief and is higher than the Coastal Plain.

The third zone, that of the Appalachian Mountains, extends from the Blue Ridge to the west boundary of the State, and has an area of about 2,000 square miles. It includes the counties of Washington, Allegany, and Garrett. In the main this region consists of an alternation of valleys and mountain ridges, the latter rising to altitudes of 2,000 and 3,000 feet. In the western part, mainly in Garrett County, is a plateau with a rolling surface 2,500 feet above sea level.

The mean elevation of the State is estimated at 350 feet. The areas in different zones of altitude are as follows:

<i>Elevations in Maryland.</i>	
	Square miles.
Sea level to 100 feet.....	7,400
100 to 500 feet.....	2,000
500 to 1,000 feet.....	1,700
1,000 to 1,500 feet.....	300
1,500 to 2,000 feet.....	410
2,000 to 3,000 feet.....	400

Maryland was first settled in 1634 under a charter to Lord Baltimore, settlement being made at St. Marys. It was one of the thirteen original States, having adopted the Constitution on April 28, 1788. In 1791 the State ceded to the General Government for the purposes of a capital an area of about 70 square miles, which constitutes the present District of Columbia. The following table shows the growth of population in the State from the first census in 1790 to the latest in 1900:

*Population of Maryland at each census since 1790.*

Census.	Population.	Increase.
		<i>Per cent.</i>
1790 .....	319,723	
1800 .....	341,548	6.8
1810 .....	380,546	11.4
1820 .....	407,350	7.0
1830 .....	447,040	9.7
1840 .....	470,019	5.1
1850 .....	583,034	24.0
1860 .....	687,049	17.8
1870 .....	780,894	13.7
1880 .....	934,943	19.7
1890 .....	1,042,390	11.5
1900 .....	1,188,044	14.0

In 1730 Maryland was the sixth State in the Union in population. In 1900, although its inhabitants were 3.7 times as numerous, it had dropped to the twenty-sixth in rank, owing to the rapid growth of the newer States in the Mississippi Valley. In 1900 the average density of population was 120 persons to the square mile. It has five cities which exceed 6,000 inhabitants, of which Baltimore has over half a million. The other four are as follows: Cumberland, 17,128; Hagerstown, 13,591; Frederick, 9,296; and Annapolis, the capital, 8,525. These five cities contain 46.9 per cent of the population of the entire State. In cities of more than 2,500 inhabitants live 48.8 per cent, or nearly one-half the population of the State, while the remainder, 51.2 per cent, may be regarded as rural. In 1900 the population was divided almost equally between the two sexes, 49.6 per cent being males and 50.4 per cent being females. The negro population, though large for a border State, is diminishing in proportion to the whites. In 1900 the whites formed 80.2 per cent and the negroes 19.8 per cent, or nearly one-fifth of the population. The number of foreign-born inhabitants was also small, the persons of native birth forming 92.1 per cent, while those born in foreign countries were 7.9 per cent. Immigration from other States has not been large, since it is found that of the native population 13 per cent were born in other States.

For a State containing so large a proportion of negroes, the illiteracy is slight. In 1900, persons of 10 years of age and upward who were unable to read and write constituted 11.1 per cent of the population. The illiterates comprised only 4.1 per cent of the native whites over 10 years old, 13.4 per cent of the foreign born, and 35.1 per cent of the negroes.

Of the population, 15 years old and upward, 37.9 per cent were single; 52.9 per cent married; 8.5 per cent widowed; 0.2 per cent divorced; and the conjugal condition of the remainder was unknown. The average size of a family was 4.9 persons, being somewhat larger than the average for the country.

Of persons 10 years old and upward, practically one-half, or exactly 49.8 per cent, were engaged in gainful occupations. Of males, 79.0 per cent were wage-earners; of females, 21.0 per cent. The following table shows the proportion of the wage-earners employed in each of the five general classes of occupations:

*Division of wage-earners according to occupations.*

	Per cent.
Agriculture .....	20.8
Professions .....	4.2
Domestic and personal service .....	26.1
Trade and transportation .....	19.9
Manufacturing and mining .....	29.0

Agriculture is one of the leading occupations. In 1900 the State contained 46,021 farms, of which seven-eighths were occupied by white farmers and one-eighth by negro farmers. Two-thirds of the farms were owned by their occupants, and one-third were rented, either for money rental or on shares of the products. The farms had a total area of 5,170,075 acres. The cultivated area amounted to 3,516,352 acres, or more than two-thirds of the farm area and 55.7 per cent of the total area of the State. The average size of the farms was 112.4 acres, being considerably less than the average for the United States. The total value of all the farms was \$204,645,407, which was made up of the following items:

*Value of farm lands, buildings, and accessories.*

Land .....	\$120,367,550
Buildings .....	54,810,760
Implements and machinery .....	8,611,220
Live stock .....	20,855,877
Average value per farm .....	4,448
Average value of products per farm .....	952

The product amounted to 21.0 per cent of the value of the farms, and may be regarded as the farming profit. The following table shows the amount of live stock in the State:

*Live stock in Maryland in 1900.*

Cattle .....	306,710
Horses .....	188,726
Mules .....	19,734
Sheep .....	194,079
Swine .....	359,812

The following table shows the leading farm products:

*Dairy products of Maryland in 1900.*

Dairy products .....	\$5, 228, 698
Poultry products .....	\$1, 158, 020
Fruit .....	\$2, 490, 385
Corn .....	bushels.. 19, 766, 510
Wheat .....	do. 9, 671, 800
Oats .....	do. 1, 109, 560
Potatoes .....	do. 1, 991, 357
Sweet potatoes .....	do. 677, 848
Hay .....	tons.. 507, 042
Tobacco .....	pounds.. 24, 589, 480

In the production of tobacco, Maryland is the eighth State in the Union.

Manufactures are of great importance, Maryland being the fourteenth State in the Union, while in agriculture it is only the twenty-ninth. The following table summarizes its manufactures, of which two-thirds are carried on in the city of Baltimore:

*Statistics of manufactures of Maryland for 1900.*

Establishments .....	9, 879
Employees .....	108, 325
Horsepower .....	141, 879
Capital .....	\$163, 147, 260
Wages .....	\$38, 748, 551
Materials .....	\$144, 397, 680
Products .....	\$242, 552, 990

The railway mileage in the State in 1902 was 1,383 miles, most of which was in the Baltimore and Ohio and the Pennsylvania systems. There is one canal, the Chesapeake and Ohio, which follows Potomac River from Cumberland to Washington, D. C., and is principally used for the transportation of coal from the Cumberland district.

The principal and almost sole mineral product of the State is coal, which is mined in large quantities in the neighborhood of Cumberland. It is a bituminous coal of excellent quality. In 1901 the amount mined was 5,113,127 tons.



## GAZETTEER.

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- Aaron**; run, a small branch of Savage River in Garrett County.
- Abbey**; point in Harford County, projecting into the mouth of Bush River.
- Abell**; post village in St. Mary County.
- Aberdeen**; creek, a small branch of South River in Anne Arundel County.
- Aberdeen**; post village in Harford County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads. Population 600.
- Abingdon**; post village in Harford County.
- Accident**; post village in Garrett County.
- Accokeek**; post village in Prince George County.
- Acre**; creek, a small branch of Big Annemessex River in Somerset County.
- Adam**; small, almost entirely marshy island in Chesapeake Bay, Dorchester County.
- Adamstown**; post village in Frederick County on the Baltimore and Ohio Railroad.
- Adelina**; post village in Calvert County.
- Adkins**; small pond drained by Givens Branch in Wicomico County.
- Admiral**; post village in Anne Arundel County.
- Ady**; village in Harford County.
- Aikin**; post village in Cecil County on the Baltimore and Ohio Railroad.
- Aireys**; post village in Dorchester County on the Philadelphia, Baltimore and Washington Railroad.
- Aisquith**; neck, small strip of land in Dorchester County, lying between Far Creek and Honga River.
- Alborton**; post village in Howard County on the Baltimore and Ohio Railroad.
- Aldino**; post village in Harford County.
- Aleck**; pond, a small inlet of Isle of Wight Bay in Worcester County.
- Alesia**; post village in Carroll County on the Western Maryland Railroad.
- Allegany**; county, in the western mountainous part of the State, limited on the south by Potomac River, the south boundary of the State, on the north by Mason and Dixon's line, which is the southern boundary of the State of Pennsylvania, on the east by Washington County, and on the west by Garrett County. The surface is an alternation of ridges and valleys, trending nearly northeast and southwest, the latter drained by streams flowing into Potomac River. The area of the county is 432 square miles, of which more than one-fourth, or 75,900 acres, was under cultivation in 1900. The population for the same year was 53,694. The county seat and chief city is Cumberland, a coal-mining center of much importance, with a population of 17,128 in 1900. The average magnetic declination in the county in 1900 was 4° 5' west. The annual rainfall commonly ranges between 45 and 50 inches and the mean annual temperature between 45° and 50°.
- Allegany**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Allegany Grove**; village in Allegany County.
- Allegany Heights**; summit of Backbone Mountain in Garrett County; height, 3,187 feet.
- Allen**; village in Wicomico County.

**Allen Fresh;** village in Charles County.

**Allibone;** village in Harford County.

**Allomay;** creek, heads in Pennsylvania and flows through Carroll County into the Monocacy River.

**Almshouse;** creek, small branch of South River in Anne Arundel County.

**Alpha;** post village in Howard County.

**Altamont;** post village in Garrett County on the Baltimore and Ohio Railroad.

**Ambrose;** run, a small branch of Cherry Run in Garrett County.

**American Corners;** post village in Caroline County.

**Ammdendale;** post village in Prince George County on the Baltimore and Ohio Railroad.

**Amos;** falls, in Susquehanna River in Cecil and Harford counties.

**Amos;** small island in Susquehanna River in Harford County.

**Amos;** post village in Harford County.

**Anacostia;** river, rising in Prince George County and flowing through the District of Columbia into Potomac River.

**Andersontown;** post village in Caroline County.

**Andora;** post village in Cecil County.

**Annapolis;** city and the capital of the State, situated in Anne Arundel County on the Annapolis, Washington and Baltimore and the Baltimore and Annapolis Short Line railroads. Population, 8,525.

**Annapolis Harbor;** small inlet of Severn River in Anne Arundel County.

**Annapolis Junction;** station in Howard County on the Annapolis, Washington and Baltimore and the Baltimore and Ohio railroads.

**Annapolis Roads;** a small inlet of Chesapeake Bay in Anne Arundel County.

**Anne Arundel;** county, situated in the central part of the State, bounded on the north by Baltimore County, east by Chesapeake Bay, south by Calvert County, west by Patuxent River and Prince George County, and northwest by Howard County. The surface is of a rolling character, but has no very elevated points. The area of the county is 425 square miles, of which more than one-half, or 148,325 acres, was under cultivation in 1900. The county seat and largest city is Annapolis, the capital and oldest city in the State, with a population of 8,525 in 1900. The average magnetic declination in the county in 1900 was 5° 0' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 45° and 50°.

**Antietam;** river, a branch of Potomac River in Washington County.

**Ape Hole;** creek, small stream flowing into Pocomoke Sound in Somerset County.

**Applegarth;** post village on Hooper Island in Dorchester County.

**Appleton;** post village in Cecil County.

**Aquasco;** post village in Prince George County.

**Araby;** post village in Frederick County on the Baltimore and Ohio Railroad.

**Arbutus;** station in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.

**Arden;** post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.

**Ardwick;** post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Arlington;** station on the Western Maryland Railroad, partly in Baltimore County and partly in Baltimore City limits.

**Armiger;** post village in Anne Arundel County.

**Arnold;** point in Cecil County, projecting into Elk River.

**Arnold;** point in Anne Arundel County, projecting into Severn River.

**Arnold;** post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.

- Arundel**; station in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Arundel-on-the-Bay**; post village in Anne Arundel County.
- Ash**; post village in Washington County.
- Asher Glade**; village in Garrett County.
- Ashland**; post village in Baltimore County.
- Ashton**; post village in Montgomery County.
- Aspen**; post village in Montgomery County.
- Assacorkin**; small marshy island in Chincoteague Bay, Worcester County.
- Assawoman**; bay, the northern extension of Isle of Wight Bay, which lies between the main coast and an outlying sand bar in Worcester County.
- Athaloo**; landing on Nanticoke River in Wicomico County.
- Atholton**; post village in Howard County.
- Avalon**; post village in Talbot County.
- Avalon**; station in Baltimore County on the Baltimore and Ohio Railroad.
- Avenel**; post village in Montgomery County.
- Avery**; post village in Montgomery County.
- Avilton**; post village in Garrett County.
- Avon**; creek, a small branch of Nanjemoy Creek in Charles County.
- Avondale**; creek, a small branch of Little Run in Carroll County.
- Avondale**; post village in Carroll County on the Western Maryland Railroad.
- Aydelotte**; branch, a small stream flowing into Newhope Pond, an inlet of Pocomoke River.
- Ayer**; creek, a small branch of Trappe Creek in Worcester County.
- Bachelor**; point in Talbot County, projecting into Tred Avon River.
- Back**; small branch of Western Branch in Prince George County.
- Back**; cove, a small inlet of Chesapeake Bay in Smith Island, Somerset County.
- Back**; creek, a small branch of Choptank River in Dorchester County.
- Back**; creek, a branch of Elk River in Cecil County.
- Back**; creek, a small branch of Manoken River in Somerset County.
- Back**; creek, a small branch of Patuxent River in Anne Arundel County.
- Back**; creek, a small branch of Patuxent River in Calvert County.
- Back**; creek, a small branch of Sassafras River in Cecil County.
- Back**; creek, a small branch of Severn River in Anne Arundel County.
- Back**; creek, a small stream in Worcester County flowing into Assawoman Bay.
- Back**; river, a short estuary on the west side of Chesapeake Bay in Baltimore County.
- Backbone**; mountain in Garrett County.
- Back Creek**; neck, a narrow strip of land lying between Back Creek and Elk River in Cecil County.
- Backgarden**; creek, a small stream flowing through sea marshes in Dorchester County into Fishing Bay.
- Backgarden**; small pond at the head of Backgarden Creek in Dorchester County.
- Back River**; neck, a strip of land lying between Middle River and Back River in Baltimore County.
- Back Wye**; river, a branch of Wye River in Queen Anne County.
- Bacon Hall**; village in Baltimore County.
- Bacon Hill**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Bacons**; wharf on St. Mary River in St. Mary County.
- Baden**; post village in Prince George County.
- Bagley**; post village in Harford County.
- Bakers**; cove, a small inlet of Chesapeake Bay in Cecil County.
- Bald Friar**; village in Cecil County.

**Bald Hill**; small branch of Western Branch in Prince George County.

**Baldwin**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.

**Baldwin**; post village in Cecil County on the Baltimore and Ohio Railroad.

**Ball**; creek, a small branch of Broad Creek in Talbot County.

**Ballanger**; creek, a small branch of Monocacy River in Frederick County.

**Baltimore**; chief city of Maryland, situated on an excellent harbor in Chesapeake Bay. The city is independent of county government. It is entered by the following railroads: Northern Central; Philadelphia, Baltimore and Washington; Baltimore and Annapolis Short Line; Baltimore and Ohio; Western Maryland; and Maryland and Pennsylvania. Population, 508,957.

**Baltimore**; county, situated in the northern central part of the State, bordered on the north by Pennsylvania, east by Harford County, west by Carroll County, and southwest and south by Patapsco River. This county is the most important one in the State, owing to its position surrounding Baltimore City. The surface is very uneven and varied. The area of the county is 656 square miles, more than one-half of which, or 244,806 acres, was under cultivation in 1900. The population for the same year was 90,755; the county seat, Towson, a town within a short distance of Baltimore City. The average magnetic declination in the county in 1900 was 5° 20' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Bank**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.

**Barclay**; post village in Queen Anne County on the Philadelphia, Baltimore and Washington Railroad.

**Barksdale**; post village in Cecil County on the Baltimore and Ohio Railroad.

**Barley**; creek, a small branch of South River in Anne Arundel County.

**Barnes**; cove, a small inlet of Tangier Sound on Smith Island in Somerset County.

**Barnes Landing**; creek, a small branch on Smith Island in Somerset County flowing into Chesapeake Bay.

**Barnesville**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Barrelville**; village in Allegany County on the Cumberland and Pennsylvania Railroad.

**Barren**; creek, a branch of Nanticoke River in Wicomico County.

**Barron**; island in Dorchester County in Chesapeake Bay.

**Barron Creek**; point in Dorchester County, projecting into Nanticoke River.

**Barron Neck**; point in Talbot County, projecting into Harris Creek.

**Barstow**; post village in Calvert County.

**Bartholows**; post village in Frederick County on the Baltimore and Ohio Railroad.

**Bartlett**; run, a small stream rising in Garrett County and flowing through Allegany County into Georges Creek.

**Barton**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.

**Basin**; run, a small branch of Octararo Creek in Cecil County.

**Basket Switch**; village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.

**Bassett**; creek, a small branch flowing into Newport Bay from Worcester County.

**Bate**; neck, a strip of land lying between Warehouse and Shipping creeks in Queen Anne County.

**Battle**; creek, a small branch of Patuxent River in Calvert County.

**Battle**; post village in Calvert County.

**Bay**; village in Carroll County.

**Bayard**; post village in Anne Arundel County.

- Bay Bush**; point in Kent County, projecting into Chester River.
- Baynesville**; post village in Baltimore County.
- Bay Ridge**; village in Anne Arundel County on the Bay Ridge Railroad.
- Bayview**; village in Cecil County.
- Bayview**, village in Worcester County.
- Bay View Junction**; station in Baltimore County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads.
- Beach**; point in Harford County, projecting into Bush River.
- Beacon Clumps**; group of small marshy islands in Chincoteague Bay in Worcester County.
- Beaghn**; small branch of Beaverdam Creek in Wicomico County.
- Beallsville**; post village in Montgomery County.
- Beallsville**; village in Frederick County.
- Beane**; post village in Montgomery County.
- Beantown**; village in Charles County.
- Bear**; small branch of Big Pipe Creek in Carroll County.
- Bear**; creek, a small branch of Patapsco River in Baltimore County.
- Bear**; creek, a small stream rising in Pennsylvania and flowing through Washington County into Sideling Hill Creek.
- Bear**; creek, a branch of Youghiogheny River in Garrett County.
- Bear**; hill, a summit of Fournile Ridge in Garrett County.
- Bear**; hollow in Warrior Mountain in Allegany County.
- Bear**; point in Harford County, projecting into Chesapeake Bay.
- Bear Cabin**; small branch of Winters Run in Harford County.
- Bear Camp**; branch, a small stream rising in Pennsylvania and flowing through Allegany County into Fifteenmile Creek.
- Bear Pen**; run, a small branch of Savage River in Garrett County.
- Beard**; creek, a small branch of South River in Anne Arundel County.
- Beaver**; run, a small branch of North Branch of Patapsco River in Carroll County.
- Beavercreek**; post village in Washington County.
- Beaver Dam**; creek, a branch of Gunpowder Falls in Baltimore County.
- Beaver Dam**; creek, a small branch of Tuckahoe Creek in Queen Anne County.
- Beaverdam**; creek, a branch of Wicomico River in Wicomico County.
- Beaverdam**; creek, a small stream flowing into Keene Broads, a small pond at the head of St. John Creek in Dorchester County.
- Beaverdam**; creek, a small branch of Anacostia River in Prince George County.
- Beaverdam**; creek, a small branch of Blackwater River in Dorchester County.
- Beaverdam**; creek, a small branch of Chicacomico Creek in Dorchester County.
- Beaverdam**; creek, a small branch of Nassawango Creek in Wicomico County.
- Beaverdam**; creek, a small branch of Point Branch in Prince George County.
- Beaverdam**; post village in Worcester County on the New York, Philadelphia and Norfolk Railroad.
- Beavue**; post village in St. Mary County.
- Beck**; small branch of Beaverdam Creek in Prince George County.
- Beckleysville**; village in Baltimore County.
- Beckman**; post village in Garrett County.
- Beckwith**; creek, a small branch of Choptank River in Dorchester County.
- Bed**; run, a small branch of Gwynn Falls in Baltimore County.
- Bedsworth**; post village in Somerset County.
- Beetree**; small branch of Gunpowder Falls in Baltimore County.
- Beir**; village in Allegany County on the Baltimore and Ohio and the West Virginia Central and Pittsburg railroads.
- Belair**; county seat of Harford County on the Maryland and Pennsylvania Railroad. Population 961.

- Belalton**; post village in Charles County.  
**Belcamp**; post village in Harford County on the Baltimore and Ohio Railroad.  
**Belfast**; village in Baltimore County.  
**Bellegrove**; post village in Allegany County.  
**Bell Mills**; village in Montgomery County.  
**Bellevue**; village in Talbot County.  
**Beltsville**; station in Prince George County on the Baltimore and Ohio Railroad.  
**Belvidere**; village in Cecil County on the Baltimore and Ohio Railroad.  
**Ben**; run, a small branch of Patapsco River in Baltimore County.  
**Benedict**; post village in Charles County.  
**Benevola**; post village in Washington County.  
**Benfield**; post village in Anne Arundel County.  
**Bengies**; point in Baltimore County, projecting into Saltpeter Creek.  
**Bengies**; post village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.  
**Bennett**; creek, a small branch of Monocacy River in Frederick County.  
**Bennett**; point in Anne Arundel County, projecting into Miles Creek.  
**Benoni**; point in Talbot County, projecting into Choptank River.  
**Bens**; creek, a small branch of Lingamore Creek in Frederick County.  
**Benson**; post village in Harford County.  
**Bentley**; cove, a small inlet of Honga River in Dorchester County.  
**Bentley**; point in Dorchester County on Hooper Island, projecting into Honga River.  
**Bentley**; station in Baltimore County on the Northern Central Railway.  
**Bentley Springs**; post village in Baltimore County on Northern Central Railway.  
**Benville**; village in Charles County.  
**Benville**; village in St. Mary County.  
**Berean**; village in Baltimore County.  
**Berkley**; post village in Harford County.  
**Berlin**; town in Worcester County on the Baltimore, Chesapeake and Atlantic and the Philadelphia, Baltimore and Washington railroads. Population, 1,246.  
**Berrett**; village in Carroll County.  
**Bertha**; village in Calvert County.  
**Berwyn**; post village in Prince George County on the Baltimore and Ohio Railroad.  
**Bestpitch**; post village in Dorchester County.  
**Betheden Church**; village in Worcester County.  
**Bethel**; village in Somerset County.  
**Bethesda**; post village in Montgomery County.  
**Beth Gap**; village in Anne Arundel County.  
**Bethlehem**; post village in Caroline County on the Baltimore, Chesapeake and Atlantic Railway.  
**Betterton**; post village in Kent County.  
**Bevansville**; post village in Garrett County.  
**Bier**; post village in Allegany County on the Baltimore and Ohio and the West Virginia Central and Pittsburg railroads.  
**Big**; small island in Worcester County in Assawoman Bay.  
**Big**; small pond in Worcester County drained by Swan Gut Creek.  
**Big**; ridge, a spur of Town Hill in Allegany County.  
**Big**; run, a small branch of Maple Run in Allegany County.  
**Big**; run, a small branch of Savage Creek in Garrett County.  
**Big Annemessex**; river in Somerset County flowing into Tangier Sound.  
**Big Bay**; point in Worcester County, projecting into Chincoteague Bay.  
**Big Branch**; creek, a small branch of Deer Creek in Harford County.

- Big Elk;** creek, heads in Pennsylvania and flows through Cecil County into Elk River.
- Big Laurel;** run, a tributary of South Branch of Castleman River in Garrett County.
- Big Monie;** creek, a tributary to Chesapeake Bay in Somerset County.
- Big Patuxent;** river, heading in Howard County and flowing southeast into Chesapeake Bay, forming an estuary in its lower course.
- Big Piney;** run, heads in Garrett County and flows through Pennsylvania into Castleman River.
- Bigpool;** post village in Washington County on the Western Maryland Railroad.
- Big Savage;** mountain, lies between Savage River and Georges Creek in Garrett County.
- Big Shade;** run, heads in Pennsylvania and flows through Garrett County into Castleman River.
- Bigspring;** post village in Washington County.
- Big Thorofare;** water passageway in Somerset County between Smith Island and Otter Island.
- Billiard;** point in St. Mary County, projecting into Patuxent River.
- Billy;** small marshy island in Chesapeake Bay in Dorchester County.
- Binum;** run, a small branch of Bush Creek in Harford County.
- Birch;** small branch of Shingle Landing Prong in Worcester County.
- Bird Hill;** post village in Carroll County.
- Bird;** river, a tributary of Gunpowder River in Baltimore County.
- Birdsville;** post village in Anne Arundel County.
- Birdtown;** village in Somerset County.
- Biscoe;** creek, a small branch of Potomac River in St. Mary County.
- Bishop;** post village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.
- Bishop Head;** point in Dorchester County, projecting into Fishing Bay and Hooper Strait.
- Bishop Head;** village in Dorchester County.
- Bishopville;** post village in Worcester County. Population 243.
- Bittinger;** post village in Garrett County.
- Bivalve;** post village in Wicomico County.
- Black;** creek, a small branch flowing into Knapp Narrows in Talbot County.
- Black;** hill in Cecil County. Elevation, 311 feet.
- Blackhawk;** run, a small branch of Middle Fork Creek in Garrett County.
- Blackhorse;** village in Harford County.
- Blacklick;** run, a small tributary of Savage River in Garrett County.
- Blackrock;** run, a small branch of Western Branch in Baltimore County.
- Blacks;** post village in Kent County.
- Black Swamp;** creek, a small branch of Patuxent River in Prince George County.
- Blackwalnut;** cove, a small inlet of Choptank River in Talbot County.
- Blackwalnut;** creek, a small tributary to Chesapeake Bay in Anne Arundel County.
- Blackwalnut;** point in Talbot County, projecting into mouth of Choptank River.
- Blackwater;** river in Dorchester County flowing through sea marshes into Fishing Bay.
- Bladensburg;** town in Prince George County on the Baltimore and Ohio Railroad. Population, 463.
- Blake;** creek, a small tributary of Potomac River in St. Mary County.
- Blake;** post village in Cecil County.
- Blakistone;** post village in St. Mary County.
- Blakistone;** small island in Potomac River in St. Mary County. A light-house is erected thereon.
- Blenheim;** post village in Baltimore County.

**Blocktown;** village in Montgomery County.

**Bloodsworth;** island almost entirely marshy in Chesapeake Bay, Dorchester County.

**Bloody Point;** creek, a small tributary to Chesapeake Bay in Talbot County.

**Bloomfield;** village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.

**Blooming Rose Settlement;** village in Garrett County.

**Bloomington;** post village in Garrett County on the Baltimore and Ohio Railroad.

**Blossom;** hill, a summit in Garrett County between Pine Hill and Solomon Ridge.

**Blue;** pond, an inlet of Chincoteague Bay in Worcester County.

**Blueball;** post village in Cecil County.

**Bluelick;** run, a small tributary of Savage River in Garrett County.

**Blue Mount;** station in Baltimore County on the Northern Central Railway.

**Blue Mountain;** post village in Washington County on the Western Maryland Railroad.

**Bluestone;** post village in St. Mary County.

**Bluff;** point in Anne Arundel County, projecting into Severn River.

**Bluff;** point in St. Mary County, projecting into Wicomico River.

**Bluff;** point on Hooper Island in Dorchester County, projecting into Chesapeake Bay.

**Blythedale;** post village in Cecil County.

**Boar;** small island in Assawoman Bay in Worcester County.

**Boat;** small marshy island in Lighting Knot Cove in Somerset County, south of Smith Island.

**Bodkin;** creek, a small tributary of Patapsco River in Anne Arundel County.

**Bodkin;** small island in Eastern Bay in Queen Anne County.

**Bodkin;** point in Anne Arundel County, projecting into Chesapeake Bay.

**Bohemia;** river, a tributary to Elk River in Cecil County.

**Bolingbroke;** creek, a small tributary of Choptank River in Talbot County.

**Bolivar;** village in Frederick County.

**Booby;** small island in Chesapeake Bay in Baltimore County.

**Boone;** creek, a small tributary of Choptank River in Talbot County.

**Boones;** village in Anne Arundel County.

**Boonsboro;** town in Washington County. Population, 700.

**Boothbyhill;** post village in Harford County.

**Booze;** ditch, a small branch of Blackwater River in Dorchester County.

**Boring;** post village in Baltimore County.

**Bosely;** village in Baltimore County.

**Bostetter;** post village in Washington County.

**Boston;** creek, a small branch of Patuxent River in St. Mary County.

**Bowens;** post village in Calvert County.

**Bowie;** town in Prince George County on the Philadelphia, Baltimore and Washington Railroad. Population, 443.

**Bowley Bar;** point in Baltimore County, projecting into Middle River.

**Box;** point in Kent County, projecting into Chester River.

**Boxiron;** creek, a small branch flowing into Chincoteague Bay in Worcester County.

**Boxiron;** village in Worcester County.

**Boyer;** knob, a summit in Polish Mountain in Allegany County. Height, 1,564 feet.

**Boys;** post village in Montgomery County on the Baltimore and Ohio Railroad.

**Bozman;** post village in Talbot County.

**Braddock;** run, a small tributary of North Branch of Potomac River in Allegany County.

**Bradenbaugh;** village in Harford County.

**Bradshaw;** post village in Baltimore County on the Baltimore and Ohio Railroad.



- Brady**; station in Allegany County on the Baltimore and Ohio Railroad.
- Branchville**; post village in Prince George County on the Baltimore and Ohio Railroad.
- Brandywine**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Bread and Cheese**; creek, a small branch of Back River in Baltimore County.
- Break**; point in Queen Anne County, projecting into Chester River.
- Breakneck**; hill, a summit in Martin Mountain in Allegany County. Height, 1,872 feet.
- Breathedsville**; post village in Washington County.
- Brentland**; post village in Charles County.
- Brentwood**; post village in Prince George County on the Baltimore and Ohio Railroad.
- Breton**; bay, an inlet of Potomac River in St. Mary County.
- Brewer**; creek, a small tributary of Severn River in Anne Arundel County.
- Brewer**; point in Anne Arundel County, projecting into Severn River.
- Brewington**; branch, a small tributary of Wicomico River in Wicomico County.
- Brew Mahr Mill**; village in Garrett County.
- Brian**; point in Queen Anne County, projecting into Prospect Bay.
- Briary**; creek, a small branch of Harris Creek in Talbot County.
- Brice**; point in Anne Arundel County, projecting into Severn River.
- Brice**; run, a small tributary of Patuxent River in Baltimore County.
- Brice**; village in Charles County.
- Bricoe**; wharf on the Patuxent River in St. Mary County.
- Bridge**; creek, a small branch of Broad Creek in Talbot County.
- Bridgetown**; town in Caroline County. Population, 50.
- Brien**; run, a small branch of Northeast Creek in Baltimore County.
- Brier**; point in Baltimore County, projecting into Chesapeake Bay.
- Brier**; mountain ridge in Garrett County.
- Briery**; point in Harford County, projecting into Bush Creek.
- Brighton**; post village in Montgomery County.
- Brightseat**; village in Prince George County.
- Brink**; post village in Montgomery County.
- Brinklow**; post village in Montgomery County.
- Bristol**; post village in Anne Arundel County.
- Broad**; creek, a small branch flowing into Chesapeake Bay in Queen Anne County.
- Broad**; creek, a small branch flowing into Ellis Bay in Wicomico County.
- Broad**; creek, a small stream flowing into Pocomoke Sound in Somerset County.
- Broad**; creek, a small tributary of Chester River in Kent County.
- Broad**; creek, a small tributary of Magothy River in Anne Arundel County.
- Broad**; creek, a small tributary of Manokin River in Somerset County.
- Broad**; creek, a small tributary of South River in Anne Arundel County.
- Broad**; creek, a tributary of Choptank River in Talbot County.
- Broad**; creek, a tributary of Susquehanna River in Harford County.
- Broad**; run, a small branch of James Creek in Harford County.
- Broad**; run, a small tributary of Gunpowder Falls in Baltimore County.
- Broad**; run, a small tributary of Potomac River in Montgomery County.
- Broad**; neck, a strip of land between East and West forks of Langford Bay in Kent County.
- Broad Ford**; run, a small tributary of Little Youghiogheny River in Garrett County.
- Broad Run**; village in Frederick County.
- Brockatonorton**; bay, an arm of Chincoteague Bay in Worcester County.
- Brome**; wharf, on St. Mary River in St. Mary County.
- Bronnack**; bay, an inlet of Trippe Bay in Dorchester County.

**Brook**; run, a small branch of McIntosh Run, in St. Mary County.

**Brookeville**; town in Montgomery County. Population, 158.

**Brooklandville**; post village in Baltimore County on the Northern Central Railway.

**Brooklyn**; station in Anne Arundel County on the Baltimore and Ohio Railroad.

**Brooks**; creek, a small branch of Little Choptank River in Dorchester County.

**Brookview**; post village in Dorchester County on the Baltimore, Chesapeake and Atlantic Railway.

**Broome**; small, almost entirely marshy island in Patuxent River in Calvert County.

**Broome Island**; post village in Calvert County.

**Browning Mill**; village in Garrett County.

**Browningsville**; village in Montgomery County.

**Browns**; creek, a small tributary of Chester River in Kent County.

**Browns**; creek, a small stream flowing into Hawk Cove in Baltimore County.

**Browns**; landing on the Wye River in Queen Anne County.

**Browns**; point in Baltimore County, projecting into Middle River.

**Brownsville**; post village in Washington County on the Baltimore and Ohio Railroad.

**Bruff**; island in Wye River in Talbot County.

**Brunswick**; town in Frederick County on the Baltimore and Ohio Railroad. Population, 2,471.

**Bryantown**; post village in Charles County.

**Bryanville**; village in Garrett County.

**Buck**; hill, a summit in Peapatch Ridge in Garrett County.

**Buckeystown**; post village in Frederick County on the Baltimore and Ohio Railroad.

**Buckingham**; landing on Chester River in Kent County.

**Buck Island**; pond, a small inlet of St. Martin River in Worcester County.

**Bucklodge**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Buck Neck**; landing on Worton Creek in Kent County.

**Bucktown**; post village in Dorchester County.

**Budd**; landing on Sassafras River in Cecil County.

**Budd**; creek, a small stream on the boundary between St. Mary County and Charles County, flowing into Wicomico River.

**Budd Creek**; landing on Wicomico River in Charles County.

**Budd Creek**; post village in St. Mary County.

**Buenavista**; post village in Calvert County.

**Buenavista**; village in Prince George County.

**Buffalo**; creek, a small branch of Piney Creek in Baltimore County.

**Buffalo**; run, a small branch of Youghiogeny River in Garrett County.

**Bull Glade**; run, a small branch of Muddy Run in Garrett County.

**Bull Mountain**; hill in Cecil County. Height, 306 feet.

**Bullock**; small island at mouth of Wicomico River in St. Mary County.

**Burch**; post village in Calvert County.

**Burdette**; post village in Montgomery County.

**Burkittsville**; town in Frederick County. Population, 229.

**Burnt Mill**; creek, small branch of McIntosh Run in St. Mary County.

**Burnt Mills**; post village in Montgomery County.

**Burrisville**; village in Queen Anne County.

**Burrsville**; post village in Caroline County.

**Burtonsville**; post village in Montgomery County.

**Bush**; creek, a small branch of Monocacy River in Frederick County.

**Bush**; point in Harford County, projecting into Bush River.

**Bush**; ridge, a spur of Collier Mountain in Allegany County.

**Bush Cabin**; small branch of Gunpowder Falls in Baltimore County.

**Bush River**; post village in Harford County on the Philadelphia, Baltimore and Washington Railroad.

**Bushwood**; village in St. Mary County.

**Butler**; post village in Baltimore County.

**Butlers**; village in Anne Arundel County.

**Butlertown**; village in Kent County.

**Buxton**; village in Prince George County.

**Buzzard Island**; creek, a small tributary of Patuxent River in Calvert County.

**Cabin**; small branch of Little Seneca Creek in Montgomery County.

**Cabin**; small branch of Severn River in Anne Arundel County.

**Cabin**; small branch of Western Branch in Prince George County.

**Cabin**; branch, a small tributary of Patuxent River in Howard County.

**Cabin**; creek, a small stream flowing into Curtis Bay in Anne Arundel County.

**Cabin**; creek, a small stream flowing into Prospect Bay in Queen Anne County.

**Cabin**; creek, a small tributary of Choptank River in Dorchester County.

**Cabin Creek**; neck, a strip of land lying between Blinthorn and Cabin creeks in Dorchester County.

**Cabin John**; creek, a small tributary of Potomac River in Montgomery County.

**Cabin John**; creek, a small tributary of Elk River in Cecil County.

**Cabin John**; post village in Montgomery County.

**Cadle**; creek, a small tributary of Rhode River in Anne Arundel County.

**California**; post village in St. Mary County.

**California**; post village in Wicomico County.

**Calvary**; post village in Harford County.

**Calvert**; bay, a small arm of Potomac River in St. Mary County.

**Calvert**; county, situated in the western shore of the Chesapeake Bay, forming a peninsula which is bounded on the north by Anne Arundel County, east by the bay, and west by Patuxent River. The surface is undulating and drains from a central elevation toward the bay and river, into which flow many small creeks. The area of the county is 222 square miles, of which nearly two-thirds, or 88,605 acres, were under cultivation in 1900. The population for the same year was 10,223; the county seat, Prince Fredericktown. The average magnetic declination in the county in 1900 was 4° 45' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Calvert**; creek, a small stream in St. Mary County flowing into Calvert Bay.

**Calvert**; post village in Cecil County.

**Calverton**; station within the chartered limits of Baltimore City on the Philadelphia, Baltimore and Washington Railroad.

**Cambria**; station in Harford County on the Maryland and Pennsylvania Railroad.

**Cambridge**; town in Dorchester County on the Philadelphia, Baltimore and Washington Railroad. Population, 5,747.

**Camden**; village in Wicomico County.

**Camden Junction**; village in Baltimore County.

**Campbell**; post village in Worcester County.

**Campbell Ditch**; run, a small branch of Aydelotte Branch in Wicomico County.

**Campsprings**; post village in Prince George County.

**Canal**; village in Cecil County.

**Canoe Neck**; creek, a small branch of St. Clement Creek in St. Mary County.

**Canton**; town in Baltimore County near Baltimore.

**Capitola**; post village in Wicomico County.

**Captain**; point in St. Mary County, projecting into Patuxent River.

**Cardiff**; post village in Harford County on the Maryland and Pennsylvania Railroad.

**Carea**; post village in Harford County.

**Caren**; village in Harford County.

**Carey**; creek, a small tributary of Choptank River in Dorchester County.

**Carey**; run, a small tributary of Savage River in Garrett County.

**Carlos Junction**; station in Allegany County on the Cumberland and Pennsylvania Railroad.

**Carmichael**; post village in Queen Anne County.

**Carny**; post village in Baltimore County.

**Caroline**; county, bounded on the east by the State of Delaware, northwest and west by Queen Anne and Talbot counties, and south by Dorchester County. The surface is generally level, though sufficiently undulating to afford good drainage. The area is 320 square miles, of which more than two-thirds, or 125,908 acres, were under cultivation in 1900. The population for the same year was 16,248; county seat, Denton. The average magnetic declination in the county in 1900 was 5° 45' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Carpenter**; small island in Chester River in Queen Anne County.

**Carpenter**; point in Cecil County, projecting into Chesapeake Bay.

**Carr**; creek, a small stream flowing into Annapolis Roads in Anne Arundel County.

**Carroll**; branch, a small tributary of Gunpowder Falls in Baltimore County.

**Carroll**; county, bounded on the north by Pennsylvania, south by Howard County, east by Baltimore County, and west by Frederick County. The surface is mostly undulating, watered by fine streams, tributaries of Patapsco and Monocacy rivers, which flow from many springs of the purest water. The area of the county is 437 square miles, of which more than three-fourths, or 227,693 acres, were under cultivation in 1900. The population for the same year was 33,860. The county seat and chief town is Westminster, a town of about 3,200 inhabitants. The magnetic declination in the county in 1900 was 5° 30' west. The annual rainfall in the county commonly ranges between 45 and 50 inches and the mean annual temperature between 50° and 55°.

**Carroll**; creek, a small tributary of Monocacy River in Frederick County.

**Carroll**; point in Baltimore County, projecting into Bush River.

**Carrollton**; post village in Carroll County on the Western Maryland Railroad.

**Carrot**; cove, a small inlet of Northeast River in Cecil County.

**Carsins**; run, a small branch of Swan Creek in Harford County.

**Carsins**; village in Harford County.

**Carter**; creek, a small stream flowing into Chesapeake Bay in Queen Anne County.

**Carthagena**; creek, a small tributary of St. Mary River in St. Mary County.

**Carville**; station in Queen Anne County on the Philadelphia, Baltimore and Washington Railroad.

**Cascade**; post village in Washington County.

**Cassidy**; wharf on Sassafras River in Cecil County.

**Casson**; neck, a strip of land between Hudson and Phillips creeks in Dorchester County.

**Castlehaven**; village in Dorchester County.

**Castleman**; river heading in Garrett County and flowing into Pennsylvania into Youghiogeny River.

**Castleton**; post village in Harford County.

**Cat**; creek, a small tributary of Patuxent River in St. Mary County.

**Cathcart**; village in Harford County.

**Catlin**; village in Queen Anne County.

**Catoctin**; creek, a tributary of Potomac River in Frederick County.

**Catoctin**; mountain, a continuation of Catoctin Mountain in Virginia into Frederick County.

- Catoctin**; station in Frederick County on the Baltimore and Ohio Railroad.
- Catonsville**; village in Baltimore County.
- Cavetown**; post village in Washington County on the Western Maryland Railroad.
- Cayots**; post village in Cecil County.
- Cecil**; county, organized in 1647, one of the most thriving and enterprising in the State. It is situated in the northeast corner of the State, bounded on the north by Pennsylvania, east by Delaware, south by Sassafras River and west by Chesapeake Bay and Susquehanna River. The surface is of a mixed character, that part above the bay being mostly rolling and hilly, while below Elkton it is level. The area of the county is 360 square miles, of which almost two-thirds, or 141,401 acres were under cultivation in 1900. The population for the same year was 24,662. The county seat is Elkton, a town of about 2,600 inhabitants. Port Deposit is the principal business town, having a population of about 1,600, while Chesapeake City is the third town in size, having a population of about 1,200. The average magnetic declination in 1900 was 4° 45' west. The annual rainfall ordinarily ranges between 45 and 50 inches and the mean annual temperature between 50° and 55°.
- Cecil**; creek, a small stream in St. Mary County flowing into St. Clements Bay.
- Cecilton**; village in Cecil County.
- Cedar**; creek, a small stream flowing into Fishing Bay in Dorchester County.
- Cedar**; hill in Harford County.
- Cedar**; point in Anne Arundel County, projecting into West River.
- Cedar**; point in Anne Arundel County, projecting into Severn River.
- Cedar**; point in Charles County, projecting into Potomac River.
- Cedar**; point in Dorchester County, projecting into Honga River.
- Cedar**; point in Kent County, projecting into Chester River.
- Cedar**; point in St. Mary County, projecting into Chesapeake Bay.
- Cedar**; point in Talbot County, projecting into Broad Bay.
- Cedar**; point in Worcester County, projecting into St. Martin River.
- Cedar**; small marshy island in Chincoteague Bay in Worcester County.
- Cedar**; straits, on the boundary between Somerset County, Md., and Accomac County, Va.
- Cedar Cliff**; village in Allegany County.
- Cedargrove**; post village in Montgomery County.
- Cedarville**; post village in Prince George County on the Washington, Potomac and Chesapeake Railroad.
- Centerville**; county seat of Queen Anne County. Population, 1,231.
- Chalk**; point in Anne Arundel County, projecting into West River.
- Champ**; post village in Somerset County.
- Chance**; post village in Somerset County.
- Chance**; point in Talbot County, projecting into Harris Creek.
- Chancellor**; point in St. Mary County, projecting into St. Mary River.
- Chancellor**; point in Talbot County, projecting into Choptank River.
- Chancellors**; point in Dorchester County, projecting into Choptank River.
- Chaney**; post village in Calvert County on the Chesapeake Beach Railway.
- Chaneyville**; post village in Calvert County.
- Chapel**; creek, a small branch of Choptank River in Dorchester County.
- Chapel**; point in Charles County, projecting into Port Tobacco River.
- Chapel**; village in Harford County.
- Chapters**; point in Wicomico County, projecting into Nanticoke River.
- Chaptico**; bay, an inlet of Wicomico River in St. Mary County.
- Chaptico**; creek, a small tributary to Chaptico Bay in St. Mary County.
- Chaptico**; post village in St. Mary County.
- Charles**; small branch of Western Branch in Prince George County.

**Charles;** creek, a small branch of Honga River in Dorchester County.

**Charles;** county, organized in 1640, occupies the southwest part of the State, and is bounded on the west and south by Potomac River, north by Prince George County, and on the southwest by St. Mary County. The surface of the county is generally low, but undulated sufficiently to be well drained by the numerous branches of the bordering rivers. The area of the county is 451 square miles, of which more than one-half, or 153,465 acres, was under cultivation in 1900. The population for the same year was 17,662; the county seat, Laplata. The average magnetic declination in 1900 was 4° 30' west. The annual rainfall ordinarily ranges between 45 and 50 inches and the mean annual temperature between 50° and 55°.

**Charles;** point in Somerset County, projecting into Big Annemessex River.

**Charles;** run, a small tributary of Gunpowder Falls in Baltimore County.

**Charleston;** creek, a small tributary of Wicomico River in Charles County.

**Charlestown;** town in Cecil County on the Philadelphia, Baltimore and Washington Railroad. Population, 244.

**Charlestown;** village in Allegany County.

**Charlesville;** village in Frederick County.

**Charlotte Hall;** post village in St. Mary County on the Washington, Potomac and Chesapeake Railroad.

**Charlton;** post village in Washington County on the Western Maryland Railroad.

**Chase;** creek, a small tributary of Severn River in Anne Arundel County.

**Chase;** post village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.

**Chattolane;** post village in Baltimore County.

**Chautauqua Beach;** post village in Anne Arundel County on the Bay Ridge Railroad.

**Cheltenham;** post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Cherry;** creek, a small branch of Youghiogheny River in Garrett County.

**Cherry;** creek, a branch of Deep Creek in Garrett County.

**Cherry;** point in Dorchester County, projecting into Choptank River.

**Cherry;** small island in Choptank River in Dorchester County.

**Cherry Cove;** creek, a small stream flowing into Breton Bay in St. Mary County.

**Cherryfield;** point in St. Mary County, projecting into St. Mary River.

**Cherry Glade;** run, small tributary of Little Youghiogheny River in Garrett County.

**Cherryhill;** post village in Cecil County.

**Cherry Hill;** village in Harford County.

**Chesapeake;** bay, an arm of the Atlantic Ocean, extending from northeast Maryland nearly south, connecting with the Atlantic Ocean in Virginia, between Capes Charles and Henry. Its length is about 175 miles, and breadth 8 or 10 miles. Into it flow many large rivers from the west, namely, the Susquehanna at its head, the Rappahannock, York, and James. The bay has been produced by the sinking of the land, and the same movement is converting the lower courses of all these rivers into estuaries. The shores of the bay are marshy, especially the east shore, where the country is extremely low.

**Chesapeake;** town in Cecil County. Population, 1,172.

**Chesapeake and Ohio;** canal, artificial waterway running parallel with Potomac River from Cumberland, Md., to Georgetown, D. C.

**Chesapeake Beach;** post village in Calvert County on Chesapeake Beach Railway.

**Chester;** post village in Queen Anne County on Queen Anne's Railroad.

**Chester;** river on boundary between Kent and Queen Anne counties tributary to Chesapeake Bay.

**Chesterfield;** post village in Anne Arundel County.

- Chestertown**; county seat of Kent County on the Philadelphia, Baltimore and Washington Railroad. Population 3,008.
- Chesterville**; post village in Kent County.
- Chestnut Hill**; village in Harford County.
- Chestnut Knob**; hill in Garrett County 2,500 feet high.
- Cheston**; creek, small tributary of West River in Anne Arundel County.
- Chevy Chase**; post village in Montgomery County.
- Chew**; creek, a small tributary of Patuxent River in Calvert County.
- Chewsville**; post village in Washington County.
- Chicacomico**; river, a branch of Transquaking River in Dorchester County.
- Chicamuxen**; post village in Charles County.
- Chickomuxen**; creek, a small tributary of Potomac River in Charles County.
- Chicono**; branch, small tributary of Nanticoke River in Dorchester County.
- Chilbury**; point in Harford County, projecting into Bush River.
- Childs**; post village in Cecil County on the Baltimore and Ohio Railroad.
- Chillum**; post village in Prince George County.
- Chincapin**; run, a small branch of Herring Run in Baltimore County.
- Chincoteague**; bay, a shallow lagoon with marshy shores separating the mainland of Worcester County, Md., and Accomac County, Va., from the sand bars of the Atlantic coast.
- Chingville**; post village in St. Mary County.
- Chisholm**; run, a small tributary of Youghiogheny River in Garrett County.
- Chlora**; point in Talbot County, projecting into Choptank River.
- Choptank**; post village in Caroline County.
- Choptank**; river, heading in Caroline County and forming part of the boundary between Carroll, Talbot, and Dorchester counties and flowing into Chesapeake Bay.
- Christiana**; creek, heads in Pennsylvania and flows across the northeastern part of Cecil County, through Delaware into Delaware Bay.
- Christley**; run, a small tributary of Muddick River in Garrett County.
- Christs Rock**; village in Dorchester County.
- Chromehill**; village in Harford County.
- Chub**; run, heads in Pennsylvania and flows through Garrett County into Mill Run.
- Church**; creek, a small tributary of Choptank River in Dorchester County.
- Church**; creek, a small tributary of Bush River in Harford County.
- Church**; creek, a small tributary of Chester River in Kent County.
- Church**; creek, a small tributary of South River in Anne Arundel County.
- Church**; run, a small branch of Piney Run in Garrett County.
- Churchcreek**; post village in Dorchester County.
- Church Hill**; town in Queen Anne County. Population, 368.
- Churchton**; post village in Anne Arundel County.
- Churchville**; post village in Harford County.
- Churn**; creek, a small branch in Kent County flowing into Still Pond.
- Clagetsville**; village in Montgomery County.
- Claiborne**; post village in Talbot County.
- Clara**; post village in Wicomico County.
- Clark**; point in Baltimore County, projecting into Middle River.
- Clark**; run, a small stream in Charles County flowing into Zekiah Swamp.
- Clark**; run, a small branch of Cherry run in Garrett County.
- Clarksburg**; post village in Montgomery County.
- Clarkson**; post village in Howard County.
- Clarksville**; post village in Howard County.
- Clarks Wharf**; village in Calvert County.
- Clarysville**; village in Allegany County on the George's Creek and Cumberland Railroad.

- Clay**; island, a bit of elevated dry land in sea marshes of Dorchester County.
- Clay Bank**; point in Baltimore County, projecting into Patapsco River.
- Clay Island**; creek, a bayou flowing through Clay Island in Dorchester County.
- Clayton**; post village in Harford County on the Baltimore and Ohio Railroad.
- Clear Spring**; town in Washington County on the Western Maryland Railroad.  
Population 474.
- Clements**; creek, a small tributary of Severn River in Anne Arundel County.
- Clements**; post village in St. Mary County.
- Clermont Mills**; village in Harford County.
- Clifford**; station in Baltimore County on the Baltimore and Ohio and Baltimore and Annapolis Short Line railroads.
- Clifton**; beach in Charles County on Potomac River.
- Clifton**; small lake in suburb of Baltimore city within its chartered limits.
- Clifton**; point in Somerset County, projecting into Manokin River.
- Clinton**; post village in Prince George County.
- Cloppers**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- Cloverly**; post village in Montgomery County.
- Cobb**; point in Charles County, projecting into Wicomico River.
- Cockey**; small island at mouth of Chester River in Kent County.
- Cockeysville**; post village in Baltimore County on the Northern Central Railway.
- Cocks**; point in Anne Arundel County, projecting into Severn River.
- Cocktown**; creek, a small tributary of Patuxent River in Calvert County.
- Coffins**; point in Worcester County, projecting into Sinepuxent Bay.
- Cohouck**; point in St. Mary County, projecting into Wicomico River.
- Cokeland**; post village in Dorchester County.
- Cokesbury**; village in Somerset County.
- Colbourn**; creek, a small stream flowing into Big Annemessex River in Somerset County.
- Colbourne**; post village in Worcester County.
- Cole**; creek, a small tributary of Patuxent River in St. Mary County.
- Cole**; post village in Harford County.
- Coleman**; post village in Kent County.
- Colesville**; post village in Montgomery County.
- Colgate**; creek, a small tributary of Patapsco River in Baltimore County.
- College Green**; village in Cecil County.
- College Park**; post village in Prince George County on the Baltimore and Ohio Railroad.
- Collier**; small marshy island in Isle of Wight Bay in Worcester County.
- Collier**; small mountain ridge in Allegany County.
- Collier**; run, a small stream heading in Pennsylvania and flowing through Garrett County into Mill Creek.
- Collington**; branch of Western Branch in Prince George County.
- Collington**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Collins**; gut, a small branch of Wicomico Creek in Wicomico County.
- Colora**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Colton**; village in St. Mary County.
- Columbia**; post village in Howard County.
- Combs**; creek, a small stream flowing into Breton Bay in St. Mary County.
- Comcy**; point in Queen Anne County, projecting into Chester River.
- Comegy Light**; small island in Chester River in Kent County.
- Comegys**; run, a small branch of Broad Ford Run in Garrett County.
- Compton**; post village in St. Mary County.
- Comus**; post village in Montgomery County.



- Conaways**; post village in Anne Arundel County.
- Concord**; point in Harford County, projecting into Susquehanna River.
- Concord**; post village in Caroline County.
- Conowingo**; creek, a stream rising in Pennsylvania and flowing through Cecil County into Susquehanna River.
- Contee**; station in Prince George County on the Baltimore and Ohio Railroad.
- Contrary**; knob, a hill in Garrett County. Height, 2,500 feet.
- Conway**; hill in Backbone Mountain in Garrett County. Height, 3,073 feet.
- Conwingo**; post village in Cecil County.
- Cook**; point in Dorchester County, projecting into Choptank River.
- Cook Point**; cove, a small inlet of Choptank River in Dorchester County.
- Cooksey**; post village in Charles County.
- Cooksville**; post village in Howard County.
- Coolbranch**; run, a small branch of Deer Creek in Harford County.
- Coon**; small mountain ridge in Washington County.
- Cooper**; creek, a small branch of St. Mary River in St. Mary County.
- Cooper**; village in Harford County.
- Coopstown**; village in Harford County.
- Copperville**; village in Talbot County.
- Corbett**; post village in Baltimore County on the Northern Central Railway.
- Corbin**; village in Worcester County.
- Cordova**; post village in Talbot County on the Philadelphia, Baltimore and Washington Railroad.
- Corkers**; creek, a tributary of Pocomoke River in Worcester County.
- Cormon**; point in Somerset County, projecting into Manokin River.
- Corners**; wharf on Choptank River in Dorchester County.
- Cornersville**; post village in Dorchester County.
- Cornfield**; harbor, a small inlet of Potomac River in St. Mary County.
- Cornfield**; point in St. Mary County, projecting into Potomac River.
- Corn Hammock**; a small inlet in Assawoman Bay in Worcester County.
- Corriganville**; post village in Allegany County.
- Corsica**; river, a small tributary of Chester River in Queen Anne County.
- Costen**; station in Somerset County on the New York, Philadelphia and Norfolk Railroad.
- Cottage Grove**; village in Somerset County.
- Cotter**; cove, a small inlet of Chincoteague Bay in Worcester County.
- Cottingham**; ferry on Pocomoke River in Worcester County.
- Counallor**; point in Anne Arundel County, projecting into West River.
- Courthouse**; point in Cecil County, projecting into Elk River.
- Cove**; point in Calvert County, projecting into Chesapeake Bay. A light-house is erected thereon.
- Cove**; post village in Garrett County.
- Cove**; run, a small branch of Bear Creek in Garrett County.
- Covepoint**; post village in Calvert County.
- Covey**; creek, a small inlet of Trippe Bay in Dorchester County.
- Cow**; creek, a small tributary of Nanticoke River in Dorchester County.
- Cowentown**; post village in Cecil County.
- Cox**; creek, a small stream flowing into Eastern Bay in Queen Anne County.
- Cox**; creek, a small tributary of West River in Anne Arundel County.
- Cox**; creek, a small tributary of Patapsco River in Anne Arundel County.
- Cox**; neck, a strip of land between Cox and Crab Alley creeks in Queen Anne County.
- Cox**; point in Baltimore County, projecting into Back River.
- Cox**; post village in Calvert County on the Philadelphia, Baltimore and Washington Railroad.

- Crab**; point in Dorchester County, projecting into Honga River.
- Crab**; run, a small tributary of Castleman River in Garrett County.
- Crab Alley**; creek, a small stream flowing into Eastern Bay in Queen Anne County.
- Crab Alley**; neck, a strip of land between Crab Alley Creek and Prospect Bay in Queen Anne County.
- Crabs**; small branch of Rock Creek in Montgomery County.
- Crabtree**; creek, a small tributary of Savage River in Garrett County.
- Craigtown**; village in Cecil County.
- Crampton**; gap in the Blue Ridge Mountains in Frederick County.
- Cranberry**; run, a small tributary of Patapsco River in Carroll County.
- Crane**; cove, a small inlet of Big Annemessex Bay in Somerset County.
- Crapo**; post village in Dorchester County.
- Creagerstown**; village in Frederick County.
- Crellin**; post village in Garrett County.
- Cremona**; creek, a small tributary of Patuxent River in St. Mary County.
- Cresaptown**; post village in Allegany County.
- Creswell**; village in Harford County.
- Cristfield**; town in Somerset County. Population, 3,165.
- Crocheron**; post village in Dorchester County.
- Cromleys Mountain**; village in Cecil County.
- Cromwell**; village in Anne Arundel County.
- Cronhardt**; post village in Baltimore County.
- Cropley**; post village in Montgomery County.
- Cropper**; small, almost entirely marshy island in Newport Bay in Worcester County.
- Crooked**; run, a small branch of North Branch of Potomac River in Garrett County.
- Croom Station**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Crosby**; village in Kent County.
- Crosierdoer**; creek, a small tributary of Choptank River in Talbot County.
- Cross**; creek, a small tributary of South River in Anne Arundel County.
- Crossroads**; post village in Charles County.
- Crownsville**; post village in Anne Arundel County on the Annapolis, Washington and Baltimore Railroad.
- Crumpton**; village in Queen Anne County. Population, 207.
- Cub Hill**; village in Baltimore County.
- Cuckold**; creek, a small branch of Patuxent River in St. Mary County.
- Cuckold**; creek, a small branch of Mill Creek in St. Mary County.
- Cuckold**; creek, a small branch of Potomac River in Charles County.
- Cuckold**; point in Baltimore County, projecting into Back River.
- Cumberland**; county seat of Allegany County on the Baltimore and Ohio, the Cumberland and Pennsylvania, the George's Creek and Cumberland, the Pennsylvania, and the West Virginia Central and Pittsburg railroads. Population, 17,128.
- Cumberstone**; post village in Anne Arundel County.
- Cummings**; creek, a small branch of Harris Creek in Talbot County.
- Curtail**; small branch of Monocacy River in Frederick County.
- Curtis**; creek, a tributary to Curtis Bay in Anne Arundel County.
- Curtis**; point in Anne Arundel County, projecting into Chesapeake Bay.
- Curtis Bay Junction**; village in Baltimore County on the Baltimore and Ohio Railroad.
- Cutmptico**; creek, a small tributary of Wicomico River in Wicomico County.
- Cylburn**; village in Baltimore County on Northern Central Railway.
- Cypress**; branch, a small tributary of Chester River in Kent County.
- Dailsville**; village in Dorchester County.
- Daisy**; post village in Howard County.

**Dan**; run, a small tributary of North Branch of Potomac River in Allegany County.  
**Daniel**; village in Carroll County.

**Dans**; mountain, a summit of Allegany Front in Allegany County with a maximum altitude of 2,882 feet in Dans Rock, and a rise of over 2,000 feet above the North Branch of Potomac River, which is at its base.

**Dans Rock**; summit in Dans Mountain in Allegany County. Height, 2,882 feet.

**Damascus**; town in Montgomery County. Population, 148.

**Dames Quarter**; creek, a small tributary of Wicomico River in Somerset County.

**Dames Quarter**; post village in Somerset County.

**Dar**; post village in Baltimore County.

**Dares Wharf**; post village in Calvert County.

**Dargan**; post village in Washington County.

**Dark Hollow**; run, a small branch of Whitemarsh Run in Baltimore County.

**Darlington**; village in Harford County. Population, 260.

**Darnall**; post village in Anne Arundel County.

**Darnestown**; post village in Montgomery County.

**Davidsonville**; post village in Anne Arundel County.

**Davis**; creek, a small tributary of Choptank River in Dorchester County.

**Davis**; creek, a small branch of Langford Bay in Kent County.

**Davis**; station in Howard County on the Baltimore and Ohio Railroad.

**Davisonville**; post village in Montgomery County.

**Dawson**; post village in Allegany County.

**Dawsonville**; village in Montgomery County.

**Days**; point in Harford County, projecting into Gunpowder River.

**Daysville**; village in Frederick County.

**Dayton**; post village in Howard County.

**Deal**; island in Tangier Sound in Somerset County, nearly half of which is sea marsh.

**Deale**; post village in Anne Arundel County.

**Deal Island**; post village in Somerset County.

**Deep**; cove, a small inlet of Chester River in Kent County.

**Deep**; creek, a small stream flowing through Howard and Baltimore counties into Patuxco River.

**Deep**; creek, a small stream in St. Mary County flowing into Chesapeake Bay.

**Deep**; creek, a small tributary of Back River in Baltimore County.

**Deep**; creek, a small branch of Broad Creek in Harford County.

**Deep**; creek, a small stream in Anne Arundel County flowing into Chesapeake Bay.

**Deep**; creek, a small tributary of Magothy River in Anne Arundel County.

**Deep**; creek, a tributary of Youghiogheny River in Garrett County.

**Deep**; landing on Patuxent River in Calvert County.

**Deep**; neck, a strip of land between Edge and Irish creeks in Talbot County.

**Deep**; point in Charles County, projecting into Potomac River.

**Deep**; point projecting into Chesapeake Bay in St. Mary County.

**Deep**; point in Kent County, projecting into Chester River.

**Deep**; point in Queen Anne County, projecting into Chester River.

**Deep**; run, a stream on boundary between Howard and Anne Arundel counties, a tributary of Patuxco River.

**Deep Banks**; small marshy island in Holland Straits in Somerset County.

**Deep Neck**; point in Talbot County, projecting into Broad Creek.

**Deer**; creek, a tributary of Susquehanna River rising in Pennsylvania and flowing across the northeast corner of Baltimore County into Harford County.

**Deercreek**; post village in Harford County.

**Deer Park**; town in Garrett County on the Baltimore and Ohio Railroad. Population, 203.

**Delight**; village in Baltimore County.

**Delmar**; town in Wicomico County. Population, 659.

- Dennings**; village in Carroll County.
- Dennis**; creek, a small branch of Quantico Creek in Wicomico County.
- Denton**; county seat of Caroline County. Population, 900.
- Dentsville**; post village in Charles County.
- Derwood**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- De Sales**; village in Baltimore County.
- Detmold**; hill on boundary between Garrett and Allegany counties.
- Devil**; small marshy island in Assawoman Bay in Worcester County.
- Devil Nest**; creek, a small tributary of Zekiah Swamp in Charles County.
- Dick**; branch, a small tributary of Little Gunpowder Falls in Baltimore County.
- Dickens**; post village in Allegany County.
- Dickerson**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- Ditch**; run, a small tributary of Potomac River in Washington County.
- Dividing**; creek, a tributary of Pocomoke River on boundary between Somerset and Worcester counties.
- Dobbin**; two small islands in Magothy River in Anne Arundel County.
- Dodson**; post village in Garrett County.
- Dog**; mountain ridge in Garrett County.
- Dog and Bitch**; small marshy island in Isle of Wight Bay in Worcester County.
- Dogwood**; small branch of Little Elk River in Cecil County.
- Dogwood**; small tributary of Patapsco River in Baltimore County.
- Dominion**; village in Queen Anne County.
- Doncaster**; post village in Charles County.
- Dorchester**; county, organized in 1669; extends from Chesapeake Bay to the Delaware state line, and is bounded on the southeast by Nanticoke River and on the north by Choptank River. The surface is generally level, although the upper part of the county undulates considerably. The area is 608 square miles, of which more than a third, or 128,160 acres, was under cultivation in 1900. The population for the same year was 27,962. The county seat is Cambridge, a town of about 5,000 inhabitants, while the next town in size is East Newmarket, which had a population of 1,267 in 1900. The average magnetic declination in the county in 1900 was 5° 35' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 55° and 60°.
- Dorsey**; post village in Howard County on the Baltimore and Ohio Railroad.
- Dorseys**; run, a small tributary of Little Patuxent River in Howard and Anne Arundel counties.
- Dorseys**; run, a small tributary of Patapsco River in Howard County.
- Dorseys Run**; station in Howard County on the Baltimore and Ohio Railroad.
- Double Bridge**; branch, a small tributary of Pocomoke River in Worcester County.
- Double Lick**; run, a small branch of Blackhawk Run in Garrett County.
- Double Pipecreek**; post village in Carroll County on the Western Maryland Railroad.
- Doubs**; post village in Frederick County on the Baltimore and Ohio Railroad.
- Douglass**; run, a small branch of Cherry Run in Garrett County.
- Dougherty**; creek, a small tributary of Big Annemessex River in Somerset County.
- Doughoregan**; post village in Howard County.
- Downes**; post village in Caroline County on the Queen Anne's Railroad.
- Downesville**; post village in Washington County.
- Dove**; cove, a small inlet of Bush River in Harford County.
- Drawbridge**; post village in Dorchester County.
- Drayden**; post village in St. Mary County.
- Druid**; lake, in Druid Hill Park, a suburb of Baltimore City within its chartered limits

- Druid Hill Park**; principal park of Baltimore City.
- Drum**; point in Baltimore County, projecting into Back River.
- Drum**; point in Calvert County, projecting into Patuxent River.
- Drum**; point in Somerset County, projecting into Manokin River.
- Drum**; point in Somerset County, projecting into Tangier Sound.
- Drum**; point in Worcester County, projecting into Assawoman Bay.
- Drum**; point in Worcester County, projecting into Isle of Wight Bay.
- Drumcliff**; post village in St. Mary County.
- Drum Point**; cove, a small inlet of Manokin River in Somerset County.
- Drum Point**; village in Calvert County.
- Drunkard Lick**; run, a small tributary of Youghiogheny River in Garrett County.
- Drury**; post village in Anne Arundel County.
- Dry**; run, a small tributary of Savage River in Garrett County.
- Drybranch**; village in Harford County.
- Dry Seneca**; creek, a small branch of Seneca Creek in Montgomery County.
- Dublin**; post village in Harford County.
- Dublin**; village in Somerset County.
- Dubois**; post village in Charles County.
- Duck Point**; cove, a small inlet of Honga River in Dorchester County.
- Duffield**; village in Charles County.
- Duffy**; creek, a small tributary of Sasasfras River in Cecil County.
- Dulaney**; creek, a small tributary of Gunpowder Falls in Baltimore County.
- Dulaney Valley**; post village in Baltimore County.
- Duley**; post village in Prince George County.
- Dun**; cove, a small inlet of Harris Creek in Talbot County.
- Dung**; creek, a small tributary of Nanticoke River in Wicomico County.
- Dunghill**; summit in Negro Mountain in Garrett County.
- Dunkirk**; post village in Calvert County.
- Dunnock**; island, a bit of elevated dry land in the sea marshes of Dorchester County.
- Durden**; creek, a small tributary of Chester River in Kent County.
- Dutch**; small island in Susquehanna River in Harford County.
- Duvall**; creek, a small tributary of Whitehall River in Anne Arundel County.
- Duvall**; creek, a small tributary of South River in Anne Arundel County.
- Dynard**; post village in St. Mary County.
- Eagle**; hill in Anne Arundel County.
- Eagle**; small marshy island in St. Martin River in Worcester County.
- Eagle**; rock, a summit in Backbone Mountain in Garrett County. Height, 3,162 feet.
- Eakles Mills**; post village in Washington County on the Baltimore and Ohio Railroad.
- Eakton Mills**; village in Frederick County.
- Earleigh Heights**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Earlton**; post village in Harford County.
- Earlville**; post village in Cecil County.
- East**; branch, a small tributary of Little Elk River in Cecil County.
- East**; small branch of Winters Creek in Harford County.
- East**; creek, a small tributary of Pocomoke River in Somerset County.
- East**; run, a small tributary of St. Mary River in St. Mary County.
- Eastern**; bay, an arm of Chesapeake Bay on boundary between Queen Anne and Talbot counties.
- Eastern**; neck, a strip of land between Chesapeake Bay and Chester River in Kent County.
- Eastern Neck**; small island at mouth of Chester River in Kent County.

- East New Market**; town in Dorchester County. Population, 1,267.
- Easton**; county seat of Talbot County, on the Baltimore, Chesapeake and Atlantic and the Philadelphia, Baltimore and Washington railroads. Population, 3,074.
- Easton**; point in Talbot County, projecting into Tred Avon River.
- Eastport**; post village in Anne Arundel County.
- Eber**; village in Cecil County.
- Eckhart Mines**; post village in Allegany County.
- Eden**; post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.
- Edesville**; post village in Kent County.
- Edge**; creek, a small branch of Broad Creek, in Talbot County.
- Edgemont**; post village in Washington County on the Western Maryland Railroad.
- Edgewater**; post village in Anne Arundel County.
- Edgewood**; post village in Harford County on the Philadelphia, Baltimore and Washington Railroad.
- Ednor**; post village in Montgomery County.
- Edwards Ferry**; post village in Montgomery County.
- Edwin**; post village in Somerset County.
- Egg**; hill in Cecil County. Height, 442 feet.
- Eklo**; village in Baltimore County.
- Elbow**; small branch of Deer Creek in Harford County.
- Elbow**; hill in bend of Savage River in Garrett County.
- Elbow**; mountain, between Savage River and Big Savage River in Garrett County.
- Elbow**; ridge, small mountain ridge in Washington County.
- Elder**; post village in Garrett County.
- Eldersburg**; village in Carroll County.
- Elloak**; post village in Howard County.
- Elk**; neck, between Elk and Northeast rivers in Cecil County.
- Elk**; river in Cecil County tributary to Chesapeake Bay.
- Elklick**; run, a small branch of Georges Creek in Allegany County.
- Elk Lick**; run, a small tributary of Savage River in Garrett County.
- Elkneck**; post village in Cecil County.
- Elkridge**; village in Howard County on Baltimore and Ohio Railroad.
- Elkton**; county seat of Cecil County on the Philadelphia, Baltimore and Washington Railroad. Population, 2,542.
- Elkton**; landing on Elk River in Cecil County.
- Ellerslie**; post village and station in Allegany County on the Baltimore and Ohio Railroad.
- Ellicott**; county seat of Howard County on the Baltimore and Ohio Railroad. Population, 1,331.
- Elliott**; island, a tract of elevated dry land in sea marshes of Dorchester County.
- Elliott**; post village in Dorchester County on Elliott Island.
- Ellis**; bay, an inlet at mouth of Wicomico River in Wicomico County, into which flows Broad Creek.
- Ellwood**; post village in Dorchester County.
- Elmer**; post village in Montgomery County.
- Elsio**; post village in Baltimore County.
- Elvaton**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Emmitsburg**; town in Frederick County on the Emmitsburg Railroad. Population, 849.
- Emmorton**; post village in Harford County.
- Emory**; cove, a small inlet of Corsica River in Queen Anne County.

**Emory**; post village in St. Mary County.

**Emory Grove**; post village in Baltimore County on the Western Maryland Railroad.

**Engle Mills**; post village in Garrett County.

**Ernstville**; village in Washington County.

**Etchison**; post village in Montgomery County.

**Evans**; hill in Garrett County.

**Evitts**; creek, a small branch of North Branch of Potomac River in Allegany County.

**Evitts**; mountain, a small mountain ridge in Allegany County.

**Evna**; village in Baltimore County.

**Ewell**; post village in Somerset County.

**Exline**; village in Washington County.

**Fairbank**; post village in Talbot County.

**Fairhaven**; post village in Anne Arundel County.

**Fairhill**; post village in Cecil County.

**Fairland**; post village in Montgomery County.

**Fairlee**; creek, a small stream in Kent County flowing into Chesapeake Bay.

**Fairlee**; post village in Kent County.

**Fairmont**; post village in Somerset County.

**Fair Sweep**; village in Garrett County.

**Fairview**; point in Harford County, projecting into Bush River.

**Fairview**; post village in Washington County on the Western Maryland Railroad.

**Fairview**; village in Talbot County.

**Falling**; small branch of Deer Creek in Harford County.

**Fallston**; post village in Harford County on the Maryland and Pennsylvania Railroad.

**Far**; creek, a small tributary of Honga River in Dorchester County.

**Farhole**; creek, a small tributary of Tred Avon River in Talbot County.

**Farm**; creek, a small stream in Dorchester County flowing into Fishing Bay.

**Farmington**; landing on Piscataway Creek in Prince George County.

**Farmington**; post village in Cecil County.

**Fassett**; point in Dorchester County, projecting into Sinepuxent Bay.

**Faulkner**; post village in Charles County.

**Fearer**; post village in Garrett County.

**Federal**; hill in Allegany County. Height, 2,106 feet.

**Federal Hill**; village in Harford County.

**Federalsburg**; village in Caroline County on the Philadelphia, Baltimore and Washington Railroad. Population, 539.

**Federal Spring**; small branch of Western Branch in Prince George County.

**Feik**; run, a small branch of Bear Creek in Garrett County.

**Fenwick**; creek, a small tributary of Wicomico River in Charles county.

**Ferry**; landing on Patuxent River in Prince George County.

**Ferry**; neck, a strip of land between Tred Avon River and Broad Creek in Talbot County.

**Ferry**; point in Baltimore County, projecting into Patapsco River.

**Ferry**; point in Anne Arundel County, projecting into Curtis Bay.

**Ferry**; point of Anne Arundel County, projecting into South River.

**Fifteenmile**; creek, a tributary of Potomac River in Allegany County.

**Finksburg**; post village in Carroll County on the Western Maryland Railroad.

**Finzel**; post village in Garrett County.

**First Mine**; branch, a small tributary of Gunpowder Falls in Baltimore County.

**Fishing**; bay, an arm of Chesapeake Bay in Dorchester County.

**Fishing**; creek, a small stream flowing into Chesapeake Bay in Calvert County.

**Fishing**; creek, a small tributary of Honga River in Dorchester County.

- Fishing**; creek, a small tributary of Manokin River in Somerset County.  
**Fishing**; island, a bit of elevated dry land in sea marshes of Somerset County.  
**Fishing**; point in Somerset County, projecting into Manokin River.  
**Fishing**; point in Anne Arundel County, projecting into Curtis Bay.  
**Fishing**; point, the western extremity of Elliott Island in Dorchester County, projecting into Fishing Bay.  
**Fishing**; point in St. Mary County, projecting into Patuxent River.  
**Fishing**; point on Smith Island in Somerset County, projecting into Chesapeake Bay.  
**Fishing Creek**; post village in Dorchester County.  
**Five Forks**; village in Baltimore County.  
**Five Points**; village in Wicomico County.  
**Flat**; creek, a small branch of Middle Creek in Frederick County.  
**Flatcap**; point in Somerset County, projecting into Big Annemessex River.  
**Flatland**; cove, a small inlet near mouth of Big Annemessex River in Somerset County.  
**Flintstone**; post village in Allegany County.  
**Flintville**; post village in Harford County.  
**Flood**; creek, a small branch of Potomac River in St. Mary County.  
**Florence**; post village in Howard County.  
**Fog**; point on Smith Island in Somerset County, projecting into Chesapeake Bay.  
**Fog Point**; cove, a small inlet of Hedge Straits on Smith Island in Somerset County.  
**Folly**; small branch of Western Branch in Prince George County.  
**Folly**; run, a small tributary of North Branch of Potomac River in Garrett County.  
**Fooks**; pond in Wicomico County drained by Tonytank Creek, a tributary of Wicomico River.  
**Fooks School**; village in Wicomico County.  
**Ford**; point in Harford County, projecting into Chesapeake Bay.  
**Fords**; landing on Elk River in Cecil County.  
**Fords**; wharf on Muddy Creek in Somerset County.  
**Ford Store**; post village in Queen Anne County.  
**Foreman**; landing on Wye River in Queen Anne County.  
**Forest Glen**; post village in Montgomery County on the Baltimore and Ohio Railroad.  
**Foresthill**; post village in Harford County.  
**Forestville**; village in Prince George County.  
**Fork**; creek, a small tributary of Savage River in Garrett County.  
**Fork**; post village in Baltimore County.  
**Fork of Owens**; creek, a small tributary of Monocacy River in Frederick County.  
**Formans**; branch, a small tributary of Chester River in Queen Anne County.  
**Fort**; hill, in Allegany County. Height, 1,621 feet.  
**Fort**; point in St. Mary County, projecting into St. Mary River.  
**Fort Foote**; fort in Prince George County on Potomac River.  
**Fort Frederick**; fort in Washington County.  
**Fort McHenry**; fort on Potapoco River within chartered limits of Baltimore city.  
**Fort Pendleton**; fort in Garrett County.  
**Fort Republic**; village in Calvert County.  
**Fort Washington**; post village in Prince George County on Potomac River.  
**Foster**; branch, a small tributary of Bush River in Harford County.  
**Fountain Green**; post village in Harford County.  
**Fourmile**; mountain ridge separating Muddick Run and Savage River in Garrett County.



**Fourth Mine**; branch, a small tributary of Gunpowder Falls in Baltimore County.  
**Fowblesburg**; post village in Baltimore County on the Western Maryland Railroad.  
**Fowling**; creek, a small tributary of Choptank River in Caroline County.

**Fowling Creek**; post village in Caroline County.

**Fox**; run, a small branch of Cherry Run in Garrett County.

**Foys**; hill in Cecil County. Height, 300 feet.

**Frankford**; village in Wicomico County.

**Franklin**; branch, a small tributary of Pocomoke River in Worcester County.

**Franklin**; point in Anne Arundel County, projecting into Chesapeake Bay.

**Franklin**; village in Allegany County on the Cumberland and Pennsylvania Railroad.

**Franklin**; village in Baltimore County.

**Franklinville**; post village in Baltimore County.

**Frazier**; post village in Calvert County.

**Frederick**; city, county seat of Frederick County on the Baltimore and Ohio Railroad. Population, 9,296.

**Frederick**; county, bounded on the north by Pennsylvania, on the east by Carroll County, southeast by Montgomery County, west by Blue Ridge Mountains, and south by Potomac River. The surface is undulating, partly mountainous; the Catoctin Mountains dividing the county into two broad valleys, that to the westward being drained by Catoctin River and its branches and the one eastward by Monocacy River, both rivers flowing into Potomac River. The area of the county is 662 square miles, nearly three-fourths of which, or 308,041 acres, being under cultivation in 1900. The population for the same year was 51,920. The county seat and principal city is Frederick, a town of about 9,300 inhabitants. It also contains Brunswick, a town of about 2,500 inhabitants. The average magnetic declination in the county in 1900 was 5° 10' west. The annual rainfall commonly ranges between 45 and 50 inches and the mean annual temperature between 50° and 55°.

**Frederick Junction**; station in Frederick County on the Baltimore and Ohio Railroad.

**Fredericktown**; village in Cecil County.

**Freedom**; village in Carroll County.

**Freeland**; post village in Baltimore County on the Northern Central Railway.

**Freeman**; creek, a small tributary of Sassafras River in Kent County.

**Freetown**; village in Somerset County.

**Frenchtown**; village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.

**Friendly**; post village in Prince George County.

**Friendship**; post village in Anne Arundel County.

**Friendship**; suburb of Baltimore City within its chartered limits.

**Friendship**; village in St. Mary County.

**Friendship**; station in Worcester County on the Philadelphia, Baltimore and Washington Railroad.

**Friendsville**; post village in Garrett County on the Baltimore and Ohio Railroad.

**Frog**; hollow in Collier Mountain in Allegany County.

**Frog**; point in Dorchester County, projecting into Nanticoke River.

**Frogeye**; village in Somerset County.

**Frogtown**; village in Harford County.

**Front Wye**; river on boundary between Queen Anne and Talbot counties, a tributary of Wye River.

**Frost**; village in Anne Arundel County.

**Frostburg**; town in Allegany County on the Cumberland and Pennsylvania Railroad. Population, 5,274.

**Frosts**; village in Allegany County on the West Virginia Central and Pittsburg Railroad.

**Frozen Camp**; run, a small branch of Cherry Run in Garrett County.

**Fruitland**; post village in Wicomico County on the New York, Philadelphia and Norfolk Railroad.

**Fryers**; wharf on Sassafras River in Kent County.

**Fryingpan**; cove, a small inlet of Chester River in Kent County.

**Fulford**; post village in Harford County.

**Fullerton**, post village in Baltimore County.

**Fulton**; post village in Howard County.

**Funkstown**; town in Washington County. Population, 559.

**Furnace**; creek, a small tributary of Chesapeake Bay.

**Furnace**; creek, a small branch of Curtis Creek in Anne Arundel County.

**Furnace**; creek, a small tributary of Potomac River in Frederick County.

**Furnace**; village in Harford County.

**Furnace**; village in Worcester County.

**Gab**; small island at mouth of Lighting Knot Cove in Somerset County.

**Gaither**; post village in Carroll County.

**Gaithersburg**; town in Montgomery County on the Baltimore and Ohio Railroad. Population, 547.

**Galena**; town in Kent County. Population, 251.

**Gales**; creek, a small branch of Rhode River in Anne Arundel County.

**Gales**; creek, a small tributary of Big Annemessex River in Somerset County.

**Gales**; wharf on Worton Creek in Kent County.

**Galestown**; post village in Dorchester County.

**Gallant Green**; post village in Charles County on the Washington, Potomac and Chesapeake Railroad.

**Galloway**; creek, a small branch of Middle Creek in Baltimore County.

**Galloway**; point in Baltimore County, projecting into Middle River.

**Galloways**; post village in Anne Arundel County.

**Gambage**; small marshy island in Turville Creek in Worcester County.

**Gamber**; village in Carroll County.

**Gambrills**; post village on the Annapolis, Washington and Baltimore Railroad.

**Gapland**; post village in Washington County on the Baltimore and Ohio Railroad.

**Garland**; post village in Harford County.

**Garrett**; county, bounded on the north by Pennsylvania, on the east by Washington County, on the south by the North Branch of Potomac River, and on the west by West Virginia. The county is comprised mainly in the Allegany Plateau, having an undulating surface with an average altitude not far from 2,500 feet, and rising to a mountain range above the North Branch of Potomac River, known as Backbone Mountain, which has an extreme height of 3,400 feet and an average altitude of 3,000 feet. The northwest part is drained by Youghiogheny River to the Ohio and the southeast part by North Branch of the Potomac. The area is 240 square miles, of which less than 30 per cent, or 123,932 acres, was under cultivation in 1900. The population for the same year was 17,701. The county seat is Oakland, with a population of 2,170 in 1900. The average magnetic declination in the county in 1900 was 3° 45'. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 45° and 50°.

**Garrett**; small island in Susquehanna River in Cecil County.

**Garrett Park**; town in Montgomery County on the Baltimore and Ohio Railroad. Population, 175.

**Garrison**; post village in Baltimore County.

**Gary**; post village in Howard County.

- Gasheys**; creek, a small branch of Swan Creek in Harford County.
- Geanquakin**; creek, a small tributary of Manokin River in Somerset County.
- Gem Mills**; village in Baltimore County.
- Gentsville**; village in Baltimore County.
- George**; hill in Garrett County. Height, 3,004 feet.
- Georges**; creek, a tributary of North Branch of Potomac River on boundary between Allegany and Garrett counties.
- Georges**; creek, a small tributary of Gunpowder Falls in Baltimore County.
- Georges Island**; landing in Worcester County on Chincoteague Bay.
- Georgetown**; post village in Kent County.
- German**; creek, a small branch of Tuckahoe Creek in Queen Anne County.
- Germantown**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- Gibson**; small island in Chesapeake Bay in Anne Arundel County.
- Gibson**; village in Harford County.
- Gilbert**; run, a small stream in Charles County tributary to Gilbert Swamp.
- Gilbert**; swamp, a small marshy stream flowing into Wicomico River in Charles County.
- Gillens Falls**; small branch of South Branch of Patapsco River in Carroll County.
- Gilmore**; post village in Allegany County.
- Gilpen**; post village in Allegany County.
- Ginrichs**; station in Baltimore County on the Western Maryland Railroad.
- Girdletree**; town in Worcester County on the Philadelphia, Baltimore and Washington Railroad. Population, 336.
- Gise**; village in Garret County.
- Gist**; village in Kent County.
- Gittings**; post village in Baltimore County.
- Givens**; branch, a small stream draining Adkins Pond and flowing into Pocomoke River in Wicomico County.
- Glade**; run, a small tributary of North Branch of Potomac River in Garrett County.
- Gladstone**; branch, a small tributary of Nanticoke River in Dorchester County.
- Glebe**; creek, a small tributary of Miles River in Talbot County.
- Glebe**; creek, a small branch of South River in Anne Arundel County.
- Glen**; post village in Montgomery County.
- Glenarm**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.
- Glenburnie**; station in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Glencoe**; post village in Baltimore County on the Northern Central Railway.
- Glen Cove**; village in Harford County.
- Glen Echo**; post village in Montgomery County.
- Glenelg**; post village in Howard County.
- Glen Falls**; station in Baltimore County on the Western Maryland Railroad.
- Glen Morris**; post village in Baltimore County on the Western Maryland Railroad.
- Glenndale**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Glenville**; post village in Harford County.
- Glenwood**; post village in Howard County.
- Glymont**; post village in Charles County.
- Glyndon**; post village in Baltimore County on the Western Maryland Railroad.
- Gods Grace**; point in Calvert County, projecting into Patuxent River.
- Goldenhill**; post village in Dorchester County.
- Golden Ring**; station in Baltimore County on the Baltimore and Ohio Railroad.
- Goldsboro**; creek, a small tributary of Tred Avon River in Talbot County.

- Goldsboro**; post village in Caroline County.
- Golts**; post village and station in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Good Luck**; village in Prince George County.
- Goodwill**; village in Worcester County.
- Goody Hill**; small branch of Basset Creek in Worcester County.
- Goose**; creek, a small stream in Somerset County flowing into Kedge Strait.
- Goose**; creek, a small tributary of Manokin River in Somerset County.
- Goose**; creek, a small stream in Dorchester County flowing into Fishing Bay.
- Goose**; creek, a small tributary of Choptank River in Dorchester County.
- Goose**; point in Worcester County, projecting into Sinepuxent Bay.
- Goose**; pond forming a small inlet of Assawoman Bay in Worcester County.
- Goose**; pond in Anne Arundel County having outlet into Chesapeake Bay.
- Gordon**; point in Queen Anne County, projecting into Chester River.
- Gorman**; village in Garrett County.
- Gorsuch**; post village in Carroll County on the Baltimore and Ohio Railroad.
- Gorsuch Mills**; village in Baltimore County.
- Gortner**; post village in Garrett County.
- Goshen**; creek, a small tributary of Great Seneca Creek in Montgomery County.
- Goshen**; post village in Montgomery County.
- Governor Run**; post village in Calvert County.
- Grace**; creek, a small branch of Broad Creek in Talbot County.
- Grace**; point in Baltimore County, projecting into Bush River.
- Graceham**; post village in Frederick County on the Western Maryland Railroad.
- Grafton**; village in Charles County.
- Grafton Shops**; village in Harford County.
- Graney**; creek, a small tributary to Chesapeake Bay in Queen Anne County.
- Grange**; post village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.
- Granite**; post village in Baltimore County.
- Grantsville**; town in Garrett County. Population, 175.
- Grassy**; small marshy island in Isle of Wight Bay in Worcester County.
- Gratitude**; post village in Kent County.
- Gravelly**; point in Dorchester County, projecting into Nanticoke River.
- Graveyard**; creek, a small branch of Deer Creek in Harford County.
- Graveyard**; creek, a small tributary of Severn River in Anne Arundel County.
- Gray**; point in St. Mary County, projecting into Potomac River.
- Grays**; hill in Cecil County. Height, 268 feet.
- Grays**; island, a bit of elevated dry land in sea marshes of Dorchester County.
- Grays Corner**; village in Worcester County.
- Grays Inn**; creek, a small tributary of Chester River in Kent County.
- Grayton**; post village in Charles County.
- Great**; bay, a small inlet of Tar Bay in Dorchester County.
- Great**; cove, a small inlet of Tangier Sound in Dorchester County.
- Great**; falls in the Potomac River between Fairfax County, Va., and Montgomery County.
- Great Bohemia**; creek, rises in Delaware and flows through Cecil County into Bohemia River.
- Great Egging**; beach, on sand bar separating Sinepuxent Bay from the Atlantic Ocean in Worcester County.
- Greatfalls**; post village in Montgomery County.
- Great Marsh**; point in Talbot County, projecting into Chesapeake Bay.
- Great Mills**; post village in St. Mary County.
- Great Seneca**; creek, a tributary of Potomac River in Montgomery County.

- Great Tonoloway**; creek, a small branch of Potomac River in Washington County.
- Green**; point in Worcester County, projecting into Sinepuxent Bay.
- Green**; run, a small tributary of Pocomoke River in Wicomico County.
- Green**; mountain ridge separating Town Creek from Purstane Run in Allegany County.
- Greenbury**; point in Anne Arundel County, projecting into Annapolis Roads.
- Greenbush**; point in Cecil County, projecting into Elk River.
- Greenfield Mills**; village in Frederick County.
- Green Glade**; run, a small branch of Deep Creek in Garrett County.
- Greenhill**; village in Somerset County.
- Greenhurst**; post village in Cecil County.
- Green Marsh**; point in Baltimore County, projecting into Back River.
- Greenmound**; post village in Carroll County on the Western Maryland Railroad.
- Greenock**; post village in Anne Arundel County.
- Green Point**; wharf in Kent County on Worton Creek.
- Greens**; branch, a small tributary of Gunpowder Falls in Baltimore County.
- Greensboro**; town in Caroline County on the Philadelphia, Baltimore and Washington Railroad. Population, 641.
- Green Spring**; village in Baltimore County.
- Green Spring Junction**; station in Baltimore County on the Northern Central and Western Maryland railroads.
- Green Valley**; village in Frederick County.
- Greenwood**; creek, a small stream in Queen Anne County flowing into Eastern Bay.
- Greenwood**; post village in Baltimore County on the Western Maryland Railroad.
- Greys**; creek, a small stream in Worcester County flowing into Assawoman Bay.
- Greys**; small inlet of Newport Bay in Worcester County.
- Greystone**; village in Baltimore County.
- Griffin**; post village in Caroline County.
- Grifton**; post village in Montgomery County.
- Grimes**; creek, a small tributary of Nanticoke River in Wicomico County.
- Grimes**; post village in Washington County on the Norfolk and Western Railway.
- Grove**; small tributary of Chester River in Queen Anne County.
- Grove**; neck, a strip of land between Sassafras River and Pond Creek in Cecil County.
- Grove**; point in Cecil County, projecting into mouth of Sassafras River.
- Grove**; post village in Caroline County on the Norfolk and Western Railway.
- Guard**; post village in Garrett County.
- Guest**; point in St. Mary County, projecting into St. Clement Bay.
- Guilford**; post village in Howard County.
- Gum**; point in Kent County, projecting into Chester River.
- Gumbridge**; branch, a small tributary of Pocomoke River in Worcester County.
- Gum Swamp**; village in Dorchester County.
- Gunby**; creek, a small tributary to Pocomoke Sound in Somerset County.
- Gunner**; creek, a small branch of Great Seneca Creek in Montgomery County.
- Gunpowder**; neck, a strip of land between Gunpowder and Bush rivers in Harford County.
- Gunpowder**; river, a large estuary on boundary between Harford and Baltimore counties flowing into Chesapeake Bay.
- Gunpowder Falls**; river, a tributary of Gunpowder River in Baltimore County.
- Guys**; village in Queen Anne County.
- Gwynnbrook**; post village in Baltimore County.
- Gwynns Falls**; creek in Baltimore County near Baltimore; flows into Middle Branch of Patapsco River.
- Habnab**; post village in Somerset County.
- Hackett**; point in Anne Arundel County, projecting into Annapolis Roads.

**Hagerstown**; county seat of Washington County on the Baltimore and Ohio, the Cumberland Valley, the Norfolk and Western, and the Western Maryland railroads. Population, 13,591.

**Haha**; small branch of Otter Point Creek in Harford County.

**Haight**; village in Carroll County.

**Hail**; creek, a small tributary of Chester River in Kent County.

**Hail**; point in Kent County, projecting into Chester River.

**Haines**; point in Somerset County, projecting into Tangier Sound.

**Halethorp**; post village in Baltimore County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads.

**Halfway**; post village in Washington County on the Cumberland Valley Railroad.

**Hall**; creek, a small tributary of Patuxent River in Calvert County.

**Hall**; creek, a small stream in Somerset County flowing into Big Annemessex River.

**Hall**; point in Somerset County, projecting into Tangier Sound.

**Hall**; village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Hallowing**; point in Calvert County, projecting into Patuxent River.

**Halls**; hill, a summit in Hoop Pole Mountain Ridge in Garrett County. Height, 2,700 feet.

**Halls**; post village in Prince George County.

**Halpine**; station in Montgomery County on the Baltimore and Ohio Railroad.

**Hambleton**; creek, a small tributary of Chester River in Queen Anne County.

**Hambleton**; creek, a small branch of Miles Creek in Talbot County.

**Hambleton**; small island in Broad Creek in Talbot County.

**Hambleton**; post village in Talbot County.

**Hambrook**; sand bar in Choptank River in Dorchester County.

**Hamburg**; village in Frederick County.

**Hammock**; point in Somerset County, projecting into Little Annemessex River.

**Hammond**; branch, a tributary of Little Patuxent River in Howard County.

**Hampden**; suburb of Baltimore city within its chartered limits.

**Hampstead**; post village in Carroll County on the Western Maryland Railroad.

**Hance**; point in Cecil County, projecting into Northeast River.

**Hancock**; run, a small branch of Nanjemoy Creek in Charles County.

**Hancock**; town in WASHINGTON County; population, 824.

**Handys**; hammock, a bit of marsh in Newport Bay in Worcester County.

**Hanesville**; post village in Kent County.

**Hanover**; post village in Howard County on Baltimore and Ohio Railroad.

**Hansonville**; village in Frederick County.

**Happy Valley**; branch, a small tributary of Susquehanna River in Cecil County.

**Harbor**; cove, a small inlet of Eastern Bay in Talbot County.

**Hardesty**; post village in Prince George County.

**Hardship**; branch, a small tributary of Pocomoke River in Worcester County.

**Hardys Hole**; passage between Mills Island and a small adjacent island in Chincoteague Bay in Worcester County.

**Harford**; county, organized in 1773, is bounded on the east and southeast by Susquehanna River and Chesapeake Bay, north by Pennsylvania, and on the west and southwest by Baltimore County. The surface is varied—the lower part being level, while above the Philadelphia turnpike it is undulating and quite hilly in some parts. It is well drained by the branches of the Little Gunpowder Falls in the lower part, while Deer Creek and its branches drain the northern part. The area is 388 square miles, of which almost three-fourths, or 174,255 acres, was under cultivation in 1900. The population for the same year was 28,269. The county seat is Belair. The average magnetic declination in the county in 1900 was 5° 40' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

- Harford Furnace**; post village in Harford County.
- Harkin**; village in Harford County.
- Harmans**; post village and station in Anne Arundel County on the Annapolis, Washington and Baltimore Railroad.
- Harmony Grove**; post village and station in Frederick County on the Northern Central Railroad.
- Harper**; creek, a small tributary of Patuxent River in St. Mary County.
- Harper**; station in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.
- Harris**; creek, a tributary of Choptank River in Talbot County.
- Harris**; wharf on Chesapeake Bay in Kent County.
- Harris Lot**; post village in Charles County.
- Harrisonville**; village in Baltimore County.
- Harrisville**; village in Cecil County.
- Harry**; creek, a small tributary of St. Martin River in Worcester County.
- Harry James**; creek, a small tributary of Potomac River in St. Mary County.
- Hart**; small, almost entirely marshy island in Chesapeake Bay in Baltimore County.
- Hartley**; post village in Baltimore County.
- Harvey**; village in Washington County.
- Harwood**; post village in Anne Arundel County on the Baltimore and Ohio Railroad.
- Hasty**; point in Worcester County, projecting into St. Martin River.
- Hathaway**; small island in Patapsco River in Baltimore County.
- Hauser**; post village in Garrett County.
- Havemyer Park**; village in Prince George County.
- Havre de Grace**; post village in Harford County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads.
- Hawk**; cove, a small inlet of Chesapeake Bay in Baltimore County.
- Hawkins**; point in Anne Arundel County, projecting into Patapsco River. A light-house is erected thereon.
- Hawlings**; river, a tributary of Patuxent River in Montgomery County.
- Hawthorn**; cove, a small inlet of Seneca Creek in Baltimore County.
- Hayden**; post village in Queen Anne County.
- Haystack**; small branch of Long Green Creek in Baltimore County.
- Haystack**; pond, a small inlet at mouth of St. Martin River in Worcester County.
- Hazard**; cove, a small inlet near mouth of Big Annemessex River in Somerset County.
- Hazard**; point in Somerset County, projecting into mouth of Manokin River.
- Hazelnut**; small branch of Bens Branch in Frederick County.
- Hazen**; post village in Allegany County.
- Head of Creek**; village in Somerset County.
- Hearns**; village in Wicomico County.
- Hebbville**; village in Baltimore County.
- Hebron**; post village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.
- Helen**; post village in St. Mary County.
- Hellen**; creek, a small tributary of Patuxent River in Calvert County.
- Hellen**; gut, a small branch of Patuxent River in Calvert County.
- Hellen**; village in Calvert County.
- Hen and Chickens**; small-marshy island in St. Martin River in Worcester County.
- Henderson**; post village in Caroline County on the Philadelphia, Baltimore and Washington Railroad.
- Henryton**; post village in Carroll County on the Baltimore and Ohio Railroad.
- Henson**; creek, a small tributary of Potomac River in Prince George County.

**Hepbron**; station in Kent County on the Baltimore, Chesapeake and Atlantic Railway.

**Hereford**; village in Baltimore County.

**Hermanville**; post village in St. Mary County.

**Hernwood**; village in Baltimore County.

**Heron**; small island in Potomac River in St. Mary County.

**Herring**; bay, and arm of Chesapeake Bay in Anne Arundel County.

**Herring**; creek, a small tributary of Herring Bay in Anne Arundel County.

**Herring**; creek, a small tributary of Choptank River in Caroline County.

**Herring**; creek, a small tributary of Potomac River in St. Mary County.

**Herring**; run, a small tributary of Back River in Baltimore County.

**Herrington**; creek, a tributary of Youghiogheny River in Garrett County.

**Hess**; post village in Harford County.

**Hickory**; cove, a small inlet of Honga River in Dorchester County.

**Hickory**; village in Harford County.

**Hickorynut**; small island in Susquehanna River in Harford County.

**Hicks Mill**; village in Prince George County.

**Higgin**; point in St. Mary County, projecting into Potomac River.

**High**; point in Cecil County, projecting into Chesapeake Bay.

**High**; rock, a summit in Big Savage Mountain in Garrett County. Height, 3,000 feet.

**Highfield**; post village in Washington County.

**Highland**; post village in Howard County on the Maryland and Pennsylvania Railroad.

**High Point**; village in Harford County.

**Hill**; small marshy island in Assawoman Bay in Worcester County.

**Hill**; point in Anne Arundel County, projecting into South River.

**Hill**; run, a small branch of Georges Creek in Allegany County.

**Hill**; station in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Hills**; point in Dorchester County, projecting into Chesapeake Bay.

**Hillsboro**; town in Caroline County on the Philadelphia, Baltimore and Washington Railroad. Population, 196.

**Hills Point**; cove, a small inlet at mouth of Little Choptank River in Dorchester County.

**Hillspoint**; post village in Dorchester County.

**Hilltop**; post village in Charles County.

**Hillville**; village in St. Mary County.

**Hilton**; village in Howard County.

**Hobbs**; post village in Caroline County.

**Hoffman**; village in Allegany County on the Gunpowder Valley Railroad.

**Hog**; cove, a small inlet of Honga River in Dorchester County.

**Hog**; hills in Cecil County. Height, 300 feet.

**Hog**; marsh, a swamp in Dorchester County.

**Hog**; small island in Chesapeake Bay in Calvert County.

**Hog**; small marshy island south of Marsh Creek in Queen Anne County.

**Hoghole**; creek, a small stream tributary to Prospect Bay in Queen Anne County.

**Hog Island**; point in Worcester County, projecting into Chincoteague Bay.

**Holland**; creek, a small branch of Trappe Creek in Worcester County.

**Holland**; small, almost entirely marshy island in Holland Straits in Dorchester County.

**Holland**, point in Anne Arundel County, projecting into Chesapeake Bay.

**Holland**; point in Somerset County, projecting into Big Annemessex River.



**Holland**; strait, a passage between Bloodsworth Island and South Marsh on boundary between Dorchester and Somerset counties.

**Holland Island**; bar, a small island at entrance to Holland Straits in Dorchester County. A light-house is erected thereon.

**Holland Island**; post village in Dorchester County.

**Hollands**; small branch of Deer Creek in Harford County.

**Hollin Cliff**; point in Calvert County, projecting into Patuxent River.

**Hollins**; station in Baltimore County on the Northern Central Railway.

**Hollofield**; station in Howard County on the Baltimore and Ohio Railroad.

**Hollygrove**; station in Worcester County on the Baltimore, Chesapeake and Atlantic Railway.

**Hollywood**; post village in St. Mary County.

**Holton**; point in Queen Anne County, projecting into Chester River.

**Homeland**; station in Baltimore County on the Maryland and Pennsylvania Railroad.

**Honga**; river, a long winding bay, an arm of Chesapeake Bay.

**Hood**; point in Queen Anne County, projecting into Prospect Bay.

**Hoods Mills**; post village in Carroll County on the Baltimore and Ohio Railroad.

**Hooper**; islands, a long narrow strip of almost entirely marshy land between Honga River and Chesapeake Bay in Dorchester County.

**Hooper**; neck, a strip of land between Davis and Slaughter creeks in Dorchester County.

**Hooper**; point in Dorchester County, projecting into Little Choptank River.

**Hoopersville**; post village in Dorchester County.

**Hoop Pole**; small mountain ridge in Garrett County.

**Hope**; post village in Queen Anne County.

**Hopewell**; post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.

**Hopkins**; creek, a small branch of Middle River in Baltimore County.

**Horn**; point in Anne Arundel County, projecting into Annapolis Roads.

**Horn**; point in Dorchester County, projecting into Choptank River.

**Horner**; cove, a small inlet of West Fork of Langford Bay in Kent County.

**Horning**; run, a small branch of Bird River in Baltimore County.

**Horse**; creek, a branch of Ape Hole Creek in Somerset County.

**Horse**; small marshy island at mouth of Manklin Creek in Worcester County.

**Horse**; small marshy island in Assawoman Bay in Worcester County.

**Horsebridge**; creek, a small branch of Nassawango Creek in Wicomico County.

**Horse Landing**; creek, a small tributary of Patuxent River in St. Mary County.

**Horsepen**; branch, a small tributary of Prince George County.

**Horseshoe**; bend, a small inlet of St. Mary River in St. Mary County.

**Horseshoe**; point in Anne Arundel County, projecting into Chesapeake Bay.

**Horseshoe**; point in St. Mary County, projecting into St. Mary River.

**Houstans**; branch, a small tributary of Nanticoke River in Caroline County.

**Howard**; county, formed out of the northwest corner of Anne Arundel County, is bounded on the north by Carroll County, east by Baltimore and Anne Arundel counties, and southwest by Prince George and Montgomery counties. The surface is undulating, being completely intersected with spring branches flowing into larger streams. The area is 240 square miles, of which more than three-fourths, or 110,546 acres, was under cultivation in 1900. The population for the same year was 16,715. The county seat is Ellicott City. The average magnetic declination in the county in 1900 was 5° 15' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Howard**; wharf on St. Clement Bay in St. Mary County.

- Howardsville**; post village in Baltimore County.
- Howell**; point in Kent County, projecting into Chesapeake Bay.
- Howell**; point in Talbot county, projecting into Choptank River.
- Hoyes**; run, a small branch of Youghiogheny River in Garrett County.
- Hoyes**; post village in Garrett County.
- Huddle**; point in Anne Arundel County, projecting into Magothy River.
- Hudson**; creek, a small tributary of Choptank River in Dorchester County.
- Hudson**; post village in Dorchester County.
- Hughesville**; post village in Charles County on the Washington, Potomac and Chesapeake Railroad.
- Hughletts**; neck, a strip of land lying between Cabin and Secretary creeks in Dorchester County.
- Humphrey**; creek, a small tributary of Patapsco River in Baltimore County.
- Huntersville**; post village in St. Mary County.
- Hunting**; creek, a tributary of Patuxent River in Calvert County.
- Hunting**; creek, a small tributary of Miles River in Talbot County.
- Hunting**; creek, a small tributary of Monocacy River in Frederick County.
- Huntingfield**; creek, a small stream tributary to Chesapeake Bay in Kent County.
- Huntingfield**; point in Kent County, projecting into Chesapeake Bay.
- Hunting Hill**; post village in Montgomery County.
- Huntingtown**; post village in Calvert County.
- Hurlock**; post village in Dorchester County.
- Hurry**; post village in St. Mary County.
- Hurst**; creek, a small tributary of Choptank River in Dorchester County.
- Hutton**; creek, a small tributary of Wicomico River.
- Hutton**; post village in Garrett County on the Baltimore and Ohio Railroad.
- Hyattstown**; town in Montgomery County. Population, 81.
- Hyattsville**; town in Prince George County on the Baltimore and Ohio and the Chesapeake Beach railroads. Population, 1,222.
- Hydes**; post village in Baltimore County.
- Hynesboro**; village in Prince George County.
- Hynson**; post village in Caroline County.
- Igleharts**; village in Anne Arundel County on the Annapolis, Washington and Baltimore Railroad.
- Ijamsville**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- Ilchester**; post village in Howard County on the Baltimore and Ohio Railroad.
- Indian**; creek, a tributary of Patuxent River on boundary between St. Mary and Charles counties.
- Indian**; creek, a small branch of Anacostia River in Prince George County.
- Indian**; creek, a small tributary of Choptank River in Dorchester County.
- Indian**; landing on Severn River in Anne Arundel County.
- Indian**; point in Talbot County, projecting into Harris Creek.
- Indian**; run, a small branch of Blackrock Run in Baltimore County.
- Indianhead**; post village in Charles County.
- Indian Rock**; small island in Susquehanna River in Cecil County.
- Indian Springs**; village in Washington County.
- Ingleside**; post village in Queen Anne County.
- Inverness**; post village in Somerset County.
- Irish**; creek, a small branch of Broad Creek in Talbot County.
- Ironhill**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Iron Ore**; mountain ridge in Allegany County, extending into Pennsylvania.
- Ironshire**; post village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.

- Ironsides**; post village in Charles County.
- Island**; branch, a small tributary of Deer Creek in Harford County.
- Island**; creek, a small tributary of Choptank River in Talbot County.
- Island**; creek, a small tributary of Chester River in Queen Anne County.
- Island**; creek, a small tributary of Sassafras River in Kent County.
- Island**; creek, a small tributary of Potomac River on St. George Island in St. Mary County.
- Island**; creek, a small stream tributary of Fishing Bay in Dorchester County.
- Island**; creek, a small tributary of Patuxent River in Calvert County.
- Island**; point in Worcester County, projecting into Newport Bay.
- Island Creek**; post village in Calvert County.
- Isle of Wight**; small bay at the mouth of St. Martin River in Worcester County, separated from the ocean by a sand bar.
- Isle of Wight**; island formed of a bit of elevated dry land in the sea marshes of Worcester County.
- Israel**; creek, a small branch of Monocacy River in Frederick County.
- Issue**; post village in Charles County.
- Ivery**; post village in Howard County.
- Jabez**; branch, a small tributary of Severn River in Anne Arundel County.
- Jack**; bay, a small arm of Patuxent River in Calvert County.
- Jack**; creek, a small tributary of Nanticoke River in Dorchester County.
- Jackson**; creek, a small tributary of Deer Creek in Harford County.
- Jackson**; run, small tributary of Georges Creek in Allegany County.
- Jackson**; station in Cecil County on the Baltimore and Ohio Railroad.
- Jackson Creek**; landing on Chester River in Queen Anne County.
- Jacksonville**; post village in Baltimore County.
- Jacobs**; nose, a point in Cecil County, projecting into mouth of Elkton River.
- Jacobs Store**; village in Anne Arundel County.
- Jacobsville**; village in Anne Arundel County.
- James**; island at mouth of Choptank River in Dorchester County.
- James**; point on James Island in Dorchester County, projecting into Chesapeake Bay.
- James**; run, a small tributary of Bush River in Harford County.
- James**; post village in Dorchester County.
- Janes**; large marshy island in Tangier Sound in Somerset County.
- Jarboesville**; post village in St. Mary County.
- Jarrett**; creek, a small tributary of Chester River in Kent County.
- Jarrettsville**; post village in Harford County.
- Jason**; village in Somerset County.
- Jefferson**; village in Frederick County.
- Jenkins**; creek, a small tributary of Choptank River in Dorchester County.
- Jenkins**; creek, a small tributary of Little Annemessex River in Somerset County.
- Jenkins**; hill, a spur of Meadow Mountain in Garrett County separating Poplar Lick and Bear Pen runs.
- Jenkins**; point in Worcester County, projecting into St. Martin River.
- Jenkins**; post village in Baltimore County.
- Jennings**; post village in Garrett County.
- Jennings**; run, a tributary of Wills Creek in Allegany County.
- Jersey**; small marshy island near mouth of Little Annemessex River in Somerset County.
- Jersey**; village in Wicomico County.
- Jerusalem**; post village in Harford County.
- Jessup**; post village in Howard County on the Baltimore and Ohio Railroad.
- Jesterville**; post village in Wicomico County.

**Jewell**; post village in Anne Arundel County.

**Joes Ridge**; creek, a small stream on Smith Island in Somerset County flowing into Chesapeake Bay.

**Johns Hammock**; marsh in Assawoman Bay in Worcester County.

**Johnson**; bay, an arm of Chincoteague Bay in Worcester County.

**Johnson**; creek, a small stream flowing into Ape Hole Creek in Somerset County.

**Johnson**; small pond in Wicomico County drained by Beaverdam Creek, a tributary of Wicomico River.

**Jones**; creek, a small tributary of Annemessex River in Somerset County.

**Jones**; creek, a small tributary of Manokin River in Somerset County.

**Jones**; point in Calvert County, projecting into Patuxent River.

**Jones**; small pond in Wicomico County drained by Beaverdam Creek, a tributary of Wicomico River.

**Jones**; post village in Worcester County.

**Jones**; wharf on Patuxent River in St. Mary County.

**Jones**; wharf on St. Mary River in St. Mary County.

**Jones Falls**; creek, rises in Lake Roland and flows through Baltimore City into Northwest Harbor of Patapsco River.

**Joppa**; post village in Harford County on the Baltimore and Ohio Railroad.

**Journey Cake**; neck, a strip of land between Island Creek and Chester River in Queen Anne County.

**Judith**; point in Charles County, projecting into Patuxent River.

**Kaese Mill**; village in Garret County.

**Kalmia**; village in Harford County.

**Kane**; point in Dorchester County, projecting into Honga River.

**Kaywood**; point in St. Mary County, projecting into Potomac River.

**Kearney**; post village in Garrett County.

**Kedge**; straits, a passage between Smith Island and South Marsh in Somerset County.

**Keedysville**; town in Washington County on the Baltimore and Ohio Railroad. Population, 426.

**Keenan**; ridge, a spur of Town Hill Mountain in Allegany County.

**Keene**; broads, a small pond at head of St. John Creek in Dorchester County.

**Keene**; ditch, a small branch of Honga River in Dorchester County.

**Keener**; village in Baltimore County.

**Keeptryst**; post village in Washington County.

**Kelso**; gap in Backbone Mountain in Garrett County.

**Kelly**; point in Worcester County, projecting into Chincoteague Bay.

**Kelly**; village in Wicomico County.

**Kemptown**; village in Frederick County.

**Kendall**; post village in Garrett County.

**Kennedyville**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Kensington**; post village in Montgomery County on the Baltimore and Ohio Railroad. Population, 477.

**Kent**; county, organized in 1650, is one of the Eastern Shore counties, and is bounded on the east by the State of Delaware. It is a peninsula lying between Sassafraz River, north, Chesapeake Bay, west, and Chester River, south and southeast. The surface is level, though not low, and rolls sufficiently to be well drained by the many creeks flowing into its bordering rivers and the bay. The area is 281 square miles, of which about three-fourths, or 138,947 acres was under cultivation in 1900. The county seat is Chestertown, with a population of 3,008 in 1900. The average magnetic declination in the county in 1900 was 5° 40' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

- Kent**; island in Chesapeake Bay in Queen Anne County.  
**Kent**; landing on Kent Island in Chester River in Queen Anne County.  
**Kent**; point in Queen Anne County, projecting into Eastern Bay.  
**Kent Island**; narrows, a passage separating Kent Island from the mainland in Queen Anne County.  
**Kent Island**; village in Queen Anne County on Kent Island.  
**Kenwood**; village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.  
**Kerrick**; swamp, a small stream flowing into Zekiah Swamp in Charles County.  
**Keyser**; point in Worcester County, projecting into Isle of Wight Bay.  
**Keyser**; post village in Garrett County.  
**Kings**; creek, a small tributary of Bush River in Harford County.  
**Kings**; creek, a small branch of East Fork of Langford Bay in Kent County.  
**Kings**; creek, a tributary of Manokin River in Somerset County.  
**Kings Creek**; station in Somerset County on the New York, Philadelphia and Norfolk Railroad.  
**Kingsley**; post village in Montgomery County.  
**Kingston**; post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.  
**Kings Valley**; post village in Montgomery County.  
**Kingsville**; post village in Baltimore County.  
**Kirby**; landing on Chester River in Kent County.  
**Kirby**; wharf on Choptank River in Talbot County.  
**Kirkham**; post village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.  
**Kitty**; point in St. Mary County, projecting into Potomac River.  
**Klej Grange**; post village in Worcester County.  
**Knapp**; narrows, a narrow passage between Chesapeake Bay and Harris Creek in Talbot County.  
**Knight Island**; village in Cecil County.  
**Knoebel**; post village in Baltimore County.  
**Knot**; point in Worcester County, projecting into Newport Bay.  
**Knoxville**; post village in Frederick County on the Baltimore and Ohio Railroad.  
**Koontz**; run, a small tributary of Georges Creek in Garrett County.  
**Koontz**; village in Allegany County on the George's Creek and Cumberland Railroad.  
**Kreighbaum**; station in Allegany County on the Cumberland and Pennsylvania Railroad.  
**Krug**; station in Garrett County on the Baltimore and Ohio Railroad.  
**Kump**; post village in Carroll County.  
**Ladiesburg**; post village in Frederick County.  
**Lakeland**; post village in Prince George County on the Baltimore and Ohio Railroad.  
**Lake Ogleton**; small inlet of Annapolis Roads in Anne Arundel County.  
**Lake Roland**; small lake in Baltimore County drained by Jones Falls.  
**Lakeshore**; post village in Anne Arundel County.  
**Lakesville**; post village in Dorchester County.  
**Lambson**; village in Kent County on the Philadelphia, Baltimore and Washington Railroad.  
**Lamotte**; post village in Carroll County.  
**Lancaster**; wharf on Wicomico River in Charles County.  
**Lander**; post village in Frederick County.  
**Landonville**; post village in Somerset County.  
**Landover**; post village in Prince George County on Philadelphia, Baltimore and Washington Railroad.

- Lane**; creek, a small tributary of West River in Anne Arundel County.  
**Lanes**; run, a small branch of Licking Creek in Washington County.  
**Langford**; bay, a creek tributary to Chester River in Kent County.  
**Langford**; post village in Kent County.  
**Lanham**; post village in Prince George County.  
**Lansdown**; post village in Baltimore County on the Baltimore and Ohio Railroad.  
**Lantz**; post village in Frederick County.  
**Lapidum**; post village in Harford County.  
**Laplata**; county seat of Charles County on the Philadelphia, Baltimore and Washington Railroad.  
**Largo**; post village in Prince George County.  
**Lauraville**; village in Baltimore County.  
**Laurel**; run, a small tributary of Buffalo Run in Garrett County.  
**Laurel**; run, a small tributary of Little Elk Creek in Cecil County.  
**Laurel**; run, a small tributary of North Branch of Potomac River in Garrett County.  
**Laurel**; run, a small tributary of Youghiogheny River in Garrett County.  
**Laurel**; run, rises in Garrett County and flows through Allegany County into Georges Creek.  
**Laurel**; town in Prince George County on the Baltimore and Ohio Railroad. Population, 2,079.  
**Laurel Brook**; station in Harford County on the Maryland and Pennsylvania Railroad.  
**Laurel Grove**; post village in St. Mary County.  
**Lavender Hill**; village in Baltimore County.  
**Laws**; thoroughfare, a passageway separating Deal Island from the mainland in Somerset County.  
**Lawsonia**; post village in Somerset County.  
**Lawyers**; cove, a small inlet of Langford Bay in Kent County.  
**Layhill**; post village in Montgomery County.  
**Laytonsville**; town in Montgomery County. Population, 148.  
**Lazaretto**; point in Baltimore County, projecting into Patapsco River.  
**Leadenham**; creek, a small tributary of Broad Creek in Talbot County.  
**Leading**; point in Anne Arundel County, projecting into Patapsco River. A light-house is erected thereon.  
**Le Compt**; bay, a small inlet of Choptank River in Dorchester County.  
**Lee**; creek, a small tributary of Choptank River in Dorchester County.  
**Leeds**; creek, a small tributary of Miles River in Talbot County.  
**Leeds**; post village in Cecil County.  
**Leeland**; post village in Prince George County on the Philadelphia, Baltimore and Ohio Railroad.  
**Lego**; point in Harford County, projecting into Bush River.  
**Le Gore**; post village in Frederick County on the Northern Central Railway.  
**Leitch**; wharf on Patuxent River in Calvert County.  
**Leitchs**; post village in Anne Arundel County.  
**Lelland**; village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.  
**Leon**; post village in Anne Arundel County.  
**Leonard**; small pond in Wicomico County drained by Wicomico River.  
**Leonardtown**; county seat of St. Mary County. Population, 463.  
**Leslie**; post village in Cecil County on the Baltimore and Ohio Railroad.  
**Level**; post village in Harford County.  
**Lewis**; knob, a mountain in Garrett County. Height, 2,000 feet.  
**Lewis**; landing on Nanticoke River in Dorchester County.  
**Lewisdale**; post village in Montgomery County.  
**Lewistown**; village in Frederick County.

- Liberty Grove**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Libertytown**; small branch of Timmonstown Branch in Worcester County.
- Libertytown**; village in Frederick County.
- Licking**; creek, a tributary of Potomac River in Washington County.
- Licking**; run, a small branch of Deep Run on boundary between Howard and Anne Arundel counties.
- Licksville**; village in Frederick County.
- Lighting Knot**; cove in Smith Island in Somerset County.
- Limekiln**; post village in Frederick County.
- Linchester**; post village in Caroline County.
- Linden**; village in Montgomery County on the Baltimore and Ohio Railroad.
- Linden**; village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Lineboro**; post village in Carroll County.
- Linganore**; village in Frederick County.
- Linkwood**; post village in Dorchester County on the Philadelphia, Baltimore and Washington Railroad.
- Linthicum**; village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Linwood**; post village in Carroll County on the Western Maryland Railroad.
- Lisbon**; post village in Howard County.
- Little**; creek, a small tributary to Monie Bay in Somerset County.
- Little**; creek, a small tributary of Choptank River in Talbot County.
- Little**; small marshy island in Tangier Sound in Somerset County.
- Little**; mountain in Garrett County.
- Little**; pond in Worcester County near head of Swan Gut Creek.
- Little Allegany**; mountain, on border between Pennsylvania and Maryland in Allegany County.
- Little Annemessex**; river, a tributary to Tangier Sound in Somerset County.
- Little Bennett**; creek, a small tributary of Big Bennett Creek in Frederick County.
- Little Blackwater**; river, a tributary of Blackwater River in Dorchester County.
- Little Bohemia**; creek, a tributary of Bohemia River in Cecil County.
- Little Buffalo**; run, a small branch of Buffalo Run in Garrett County.
- Little Burnt**; branch, a small tributary of Wicomico River in Wicomico County.
- Little Catoctin**; creek, a small tributary of Potomac River in Frederick County.
- Little Choptank**; river, tributary to Chesapeake Bay in Dorchester County.
- Little Cove**; point in Calvert County, projecting into Chesapeake Bay.
- Little Deer**; creek, a small tributary of Deer Creek in Harford County.
- Little Egging**; beach on sand bar separating Sinepuxent Bay from the Atlantic Ocean in Worcester County.
- Little Elk**; creek, heads in Pennsylvania and flows through Cecil County into Elk River.
- Little Falls**; creek, a tributary of Gunpowder Falls in Baltimore County.
- Little Gunpowder Falls**; river, a tributary of Gunpowder River on boundary between Baltimore and Harford counties.
- Little Hunting**; creek, a branch of Hunting Creek in Frederick County.
- Little Laurel**; run, a small branch of South Branch of Castleman River.
- Little Magothy**; river, a tributary of Magothy River in Anne Arundel County.
- Little Monie**; creek, a tributary to Monie Bay in Somerset County.
- Little Monocacy**; river, a tributary of Monocacy River in Montgomery County.
- Little Northeast**; creek, a branch of Northeast River in Cecil County.
- Little Orleans**; post village in Allegany County.
- Little Patuxent**; river, tributary of Big Patuxent River in Howard and Anne Arundel counties.

**Little Pipe;** creek, a tributary of Big Pipe Creek on boundary between Frederick and Carroll counties.

**Little Point;** creek, a branch of Point Branch in Prince George County.

**Little Round;** bay, a small inlet of Big Round Bay in Anne Arundel County.

**Little Run;** creek, a small branch of Little Pipe Creek in Carroll County.

**Little Savage;** mountain, a ridge lying parallel to Big Savage Mountain in Garrett County, extending into Pennsylvania.

**Little Savage;** river, a tributary of Savage River in Garrett County.

**Little Seneca;** creek, a tributary of Great Seneca Creek in Montgomery County.

**Little Shade;** run, a tributary of Big Shade Run in Garrett County.

**Little Tonoloway;** creek, a tributary of Tonoloway Creek in Washington County.

**Little Troy;** small island at mouth of Sawney Cove in Somerset County.

**Little Tuscarora;** creek, a small tributary of Monocacy River in Frederick County.

**Little Youghiogheny;** river, a tributary of Youghiogheny River in Garrett County.

**Lloyd;** creek, a small tributary of Sassafras River in Kent County.

**Lloyd;** creek, a small tributary of Front Wye River in Talbot County.

**Lloyds;** point in Baltimore County, projecting into mouth of Humphrey Creek.

**Lloyds;** post village in Dorchester County.

**Loarville;** village in Allegany County.

**Loch Raven;** post village in Baltimore County on the Maryland and Pennsylvania Railroad.

**Loch Lynn Heights;** town in Garrett County. Population, 215.

**Lock 53;** village in Washington County.

**Lockearn;** village in Baltimore County.

**Locust;** point in Cecil County, projecting into Chesapeake Bay.

**Locust;** point in Cecil County, projecting into Elk River.

**Locust;** point in Harford County, projecting into Chesapeake Bay.

**Locust;** point in Somerset County, projecting into Manokin River.

**Locustgrove;** post village in Kent County.

**Loderick;** creek, a small tributary of Bush River in Harford County.

**Log;** point in Baltimore County, projecting into Middle River.

**Lombard;** post village in Cecil County.

**Lonaconing;** town in Allegany County on the Cumberland and Pennsylvania and George's Creek and Cumberland railroads. Population, 2,181.

**Lone Cedar;** point in Worcester County, projecting into Assawoman Bay.

**Lonehouse;** creek, a small tributary of South River in Anne Arundel County.

**Long;** cove, a small inlet of Langford Bay in Kent County.

**Long;** small island in Susquehanna River in Cecil County.

**Long;** small, almost entirely marshy island in Chesapeake Bay in Dorchester County.

**Long;** hollow in Tonoloway Ridge in Washington County.

**Long;** point in Anne Arundel County, projecting into Round Bay.

**Long;** point in Dorchester County, projecting into Nanticoke River.

**Long;** point in Dorchester County, projecting into Honga River.

**Long;** point in Queen Anne County, projecting into Chester River.

**Long;** point in St. Mary County, projecting into St. Clements Bay.

**Long;** point in St. Mary County, projecting into St. Mary River.

**Long;** point in St. Mary County, projecting into Patuxent River.

**Long;** point in Somerset County, projecting into Big Annemessex River.

**Long;** point in Somerset County, projecting into mouth of Wicomico River.

**Long;** point in Somerset County, projecting into Little Annemessex River.

**Long;** point in Talbot County, projecting into Miles River.

**Long;** post village in Allegany County.

**Long;** mountain ridge in Washington County lying between Tonoloway Ridge and Sideling Hill.



- Long Corner**; a village in Howard County.
- Long Draught**; creek, a tributary of Great Seneca Creek in Montgomery County.
- Long Green**; creek, a tributary of Gunpowder Falls in Baltimore County.
- Long Green**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.
- Longhaul**; creek, a small tributary of Miles River in Talbot County.
- Long Marsh**; ditch, a small tributary of Tuckahoe Creek on boundary of Queen Anne and Caroline counties.
- Longrell**; creek, a small tributary of Nanticoke River in Dorchester County.
- Longwoods**; post village in Talbot County.
- Look-in**; point in St. Mary County, projecting into Chesapeake Bay.
- Lookout**; point in St. Mary County, projecting into mouth of Potomac River.
- Lord**; post village in Allegany County.
- Lorddolph**; village in Allegany County.
- Loreley**; post village in Baltimore County on the Baltimore and Ohio Railroad.
- Loretto**; village in Somerset County on the New York, Philadelphia and Norfolk Railroad.
- Lost Sand**; run, a small tributary of North Branch of Potomac River in Garrett County.
- Lothian**; post village in Anne Arundel County.
- Lottsford**; small branch of Western Branch in Prince George County.
- Love**; point in Queen Anne County, projecting into Chester River.
- Love**; run, a small tributary of Octararo Creek in Cecil County.
- Lovell**; point in Baltimore County, projecting into Patapsco River.
- Lovely**; cove, a small inlet of East Fork of Langford Bay in Kent County.
- Lovers**; point in St. Mary County, projecting into Breton Bay.
- Loveville**; post village in St. Mary County.
- Lower Cedar**; point in Charles County, projecting into Potomac River.
- Lower Island**; point in Baltimore County, projecting into Chesapeake Bay.
- Lower Hunting**; creek, a small tributary of Upper Hunting Creek in Dorchester County.
- Lower Marlboro**; post village in Calvert County.
- Lower Spaniards**; point in Queen Anne County, projecting into Chester River.
- Lower Thorn**; point in Charles County, projecting into Potomac River.
- Lower Thoroughfare**; passageway separating Little Island from Deal Island in Somerset County.
- Lowndes**; village in Allegany County.
- Lows**; landing on Eastern Bay in Talbot County.
- Lows**; point in Talbot County, projecting into Eastern Bay.
- Loys**; post village in Frederick County on the Western Maryland Railroad.
- Luce**; creek, a small tributary of Severn River in Anne Arundel County.
- Luke**; post village in Allegany County.
- Lumber**; small marshy island in Chincoteague Bay in Worcester County.
- Lusbys**; post village in Calvert County.
- Lutherville**; post village in Baltimore County on the Northern Central Railway.
- Lydia**; post village in Washington County.
- Lynch**; point in Baltimore County, projecting into Back River.
- Lynch**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Lyons**; creek, a small tributary of Patuxent River on boundary between Calvert and Anne Arundel counties.
- Lyons Creek**; wharf on Patuxent River in Calvert County.
- McConchie**; post village in Charles County.
- McCoole**; post village in Allegany County.

- McDameltown**; village in Talbot County.
- McDaniel**; post village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.
- McDonogh**; post village in Baltimore County on the Western Maryland Railroad.
- McHenry**; post village in Garrett County.
- McIntosh**; run, a small tributary to Breton Bay in St. Mary County.
- McIntyre**; village in Harford County.
- McKendree**; post village in Anne Arundel County.
- McKendree**; village in Prince George County.
- Mackall**; post village in Calvert County.
- Macton**; post village in Harford County.
- Macum**; small tributary of Chester River in Queen Anne County.
- Maddox**; island, a bit of elevated dry land in sea marshes of Somerset County.
- Maddox**; post village in St. Mary County.
- Madison**; bay, a small inlet of Little Choptank River in Dorchester County.
- Madison**; post village in Dorchester County.
- Madonna**; village in Harford County.
- Magnolia**; post village in Harford County on the Philadelphia, Baltimore and Washington Railroad.
- Magothy**; river, an estuary entering Chesapeake Bay in Anne Arundel County.
- Magruder**; small branch of Great Seneca Creek in Montgomery County.
- Magruder**; (Tuxedo P. O.) village in Prince George County on Philadelphia, Baltimore and Washington Railroad.
- Main**; creek, a small tributary of Patapsco River in Anne Arundel County.
- Malcolm**; post village in Charles County.
- Mallows**; creek, a small tributary of Potomac River in Charles County.
- Manahowic**; creek, a small tributary of Wicomico River in St. Mary County.
- Manchester**; village in Carroll County. Population, 609.
- Manklin**; creek, a small tributary to Isle of Wight Bay in Worcester County.
- Manokin**; post village in Somerset County.
- Manokin**; river, a tributary to Tangier Sound in Somerset County.
- Manor**; post village in Baltimore County.
- Mantua**; village in Baltimore County.
- Maple**; run, a small branch of Town Creek in Allegany County.
- Maplegrove**; post village in Carroll County on the Western Maryland Railroad.
- Mapleville**; post village in Washington County.
- Marble Hill**; village in Baltimore County.
- Mardela Springs**; post village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.
- Margots**; small island in St. Martin River in Worcester County.
- Marion**; post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.
- Marlboro**; station in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Marley**; creek, a tributary of Curtis Creek in Anne Arundel County.
- Marley**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Marriott Hill**; village in Anne Arundel County.
- Marriottsville**; post village in Howard County on the Baltimore and Ohio Railroad.
- Marsh**; creek, a small branch of Back Creek in Baltimore County.
- Marsh**; creek, a small tributary of Choptank River in Caroline County.
- Marsh**; hill in Garrett County. Height, 3,073 feet.
- Marsh**; point in Kent County, projecting into Island Creek.
- Marsh**; point in St. Mary County, projecting into Patuxent River.

- Marsh**; run, a branch of Deep Creek in Garrett County.
- Marshall**; creek, a small tributary to Newport Bay in Worcester County.
- Marshall Hall**; post village in Charles County.
- Marshy**; creek, a small tributary to Prospect Bay in Queen Anne County.
- Marter**; cove, a small inlet of Wye River in Queen Anne County.
- Martin**; bay, an arm of Chincoteague Bay in Worcester County.
- Martin**; mountain ridge in Allegany County extending into Pennsylvania.
- Martin**; point in Worcester County, projecting into Chincoteague Bay.
- Martin**; point in St. Mary County, projecting into St. Mary River.
- Martinsburg**; post village in Montgomery County.
- Marumsco**; creek, a tributary of Pocomoke River in Somerset County.
- Marumsco**; post village in Somerset County.
- Marydell**; post village in Caroline County on the Philadelphia, Baltimore and Washington Railroad.
- Maryland**; point in Charles County, projecting into Potomac River.
- Maryland Line**; post village in Baltimore County.
- Masons**; island in Potomac River in Montgomery County.
- Mason Springs**; post village in Charles County.
- Massey**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Mataponi**; creek, a small tributary of Patuxent River in Prince George County.
- Mattapex**; post village in Queen Anne County.
- Mataponi**; landing on Pocomoke River in Worcester County.
- Mattawoman**; creek, a tributary of Potomac River in Prince George and Charles counties.
- Mattawoman**; post village in Charles County.
- Matthew**; run, a small tributary of Georges Creek in Allegany County.
- Matthews**; post village in Talbot County.
- Maugansville**; post village in Washington County on the Cumberland Valley Railroad.
- Mayfield**; post village in Howard County.
- Maynard**; post village in Anne Arundel County.
- Maynardier**; ridge, a spur of Meadow Mountain separating Little and Big Laurel runs in Garrett County.
- Mayo**; point in Anne Arundel County, projecting into South River.
- Mayo**; post village in Anne Arundel County.
- Meadow**; small island in Susquehanna River in Harford County.
- Meadow**; mountain ridge in Garrett County. Height, 3,031 feet.
- Meadow**; run, a small tributary of Castleman River heading in Garrett County and flowing into Pennsylvania.
- Meadow Mountain**; run, a tributary of Deep Creek in Garrett County.
- Meadows**; post village in Prince George County.
- Mechanicsville**; post village in St. Mary County on the Washington, Potomac and Chesapeake Railroad.
- Mechanic Valley**; village in Cecil County.
- Medford**; post village in Carroll County on the Western Maryland Railroad.
- Meekin**; neck, a strip of land lying between Honga River and Chesapeake Bay in Dorchester County.
- Melitota**; post village in Kent County.
- Melson**; village in Wicomico County.
- Melvale**; village in Baltimore County on the Northern Central Railway.
- Merrell**; post village in Garrett County.
- Michaelsville**; post village in Harford County.
- Middle**; branch, a tributary of Patapsco River within limits of Baltimore City.

- Middle**; small branch of Shingle Landing Prong in Worcester County.
- Middle**; creek, a small stream on Deal Island in Somerset County tributary to Tangier Sound.
- Middle**; neck, a strip of land lying between Great and Little Bohemia creeks in Cecil County.
- Middle**; ridge, a spur of Meadow Mountain in Garrett County separating Monroe and Big runs.
- Middle**; river, a tributary to Chesapeake Bay in Baltimore County.
- Middlebrook**; post village in Montgomery County.
- Middleburg**; post village in Carroll County on the Western Maryland Railroad.
- Middle Fork**; creek, a tributary of Savage River in Garrett County.
- Middle Patuxent**; river in Howard County flowing into Little Patuxent River.
- Middle Quarter**; cove, a tributary of Chester River in Queen Anne County.
- Middleriver**; post village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.
- Middletown**; town in Frederick County. Population, 665.
- Midland**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Midlothian**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Milburn**; landing on Pocomoke River in Worcester County.
- Miles**; branch, a tributary of Nanticoke River in Dorchester County.
- Miles**; river, a tributary to Eastern Bay in Talbot County.
- Milestown**; post village in St. Mary County.
- Miley**; creek, a small tributary to St. Clement Bay in St. Mary County.
- Mill**; brook, a tributary of Deer Creek in Harford County.
- Mill**; creek, a small branch of Furnace Creek in Cecil County.
- Mill**; creek, a small branch of Island Creek in Kent County.
- Mill**; creek, a small tributary of North Branch of Potomac River in Allegany County.
- Mill**; creek, a small branch of Rock Creek in Montgomery County.
- Mill**; creek, a small tributary of Whitehall River in Anne Arundel County.
- Mill**; creek, a small tributary of Patuxent River in Calvert County.
- Mill**; creek, a small tributary of Patuxent River in St. Mary County.
- Mill**; creek, a small tributary of Wicomico River in St. Mary County.
- Mill**; point in Dorchester County, projecting into Trappe Bay.
- Mill**; point in St. Mary County, projecting into Wicomico River.
- Mill**; run, a small tributary of Youghiogheny River.
- Mill**; run, a tributary of Georges Creek in Garrett and Allegany counties.
- Miller**; island in Chesapeake Bay in Baltimore County.
- Miller**; run, a small branch of Poplar Lick Run in Garrett County.
- Miller**; run, a small tributary of Youghiogheny River in Garrett County.
- Miller**; village in Allegany County.
- Millers**; post village in Carroll County on the Western Maryland Railroad.
- Millersville**; post village in Anne Arundel County on the Annapolis, Washington and Baltimore Railroad.
- Millersville**; village in Baltimore County on the Baltimore and Ohio Railroad.
- Mill Green**; village in Harford County.
- Millington**; town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 406.
- Mills**; branch, a small tributary of Chester River in Kent County.
- Mills**; small island in Susquehanna River in Cecil County.
- Mills**; small, almost entirely marshy island in Chincoteague Bay in Worcester County.
- Millstone**; village in St. Mary County.

- Millstone**; village in Washington County.
- Milltown**; landing on Patuxent River in Prince George County.
- Millville**; village in Worcester County.
- Milton**; village in Dorchester County.
- Milton**; point in Kent County, projecting into Chester River.
- Mine**; creek, a small tributary of Manokin River in Somerset County.
- Mine Bank**; run, a small tributary of Gunpowder Falls in Baltimore County.
- Mineral Spring**; village in Garrett County.
- Minksville**; village in Wicomico County.
- Mitchell**; bluff, a point in Kent County, projecting into Chesapeake Bay.
- Mitchellville**; post village in Prince George County.
- Moccasin**; pond, a small inlet of Isle of Wight Bay in Worcester County.
- Mockingbird**; pond in Wicomico County drained by Barren Creek.
- Mondel**; post village in Washington County on the Norfolk and Western Railway.
- Monie**; bay, an arm of Chesapeake Bay in Somerset County.
- Monie**; neck, a strip of land lying between Big and Little Monie creeks and Monie Bay.
- Monie**; post village in Somerset County.
- Monkey Lodge**; hill in Garrett County. Height, 2,600 feet.
- Monkton**; post village in Baltimore County on the Northern Central Railway.
- Monocacy**; post village in Montgomery County.
- Monocacy**; river, a tributary of Potomac River in Frederick County.
- Monroe**; run, a small tributary of Big Run in Garrett County.
- Monrovia**; post village in Frederick County on the Baltimore and Ohio Railroad.
- Montebello**; small lake within the chartered limits of Baltimore City.
- Montgomery**; county, bounded on the southwest by Virginia, on the northwest by Frederick County, on the northeast by Patuxent River, and southeast by Prince George County and the District of Columbia. The surface is mostly hilly, and gives rise to many branches, most of which have considerable fall in a very short distance. The area is 400 square miles, of which nearly two-thirds, or 212,840 acres, was under cultivation in 1900. The county seat is Rockville, with a population of 1,110 in 1900. The average magnetic declination in the county in 1900 was 4° 45' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.
- Montrose**; post village in Montgomery County.
- Moon**; mountain ridge in Garrett County.
- Moons**; bay, a small inlet of Big Annemessex River in Somerset County.
- Moore**; knob, a hill in Washington County. Height, 900 feet.
- Moore**; run, a small tributary of Georges Creek in Allegany County.
- Moors**; run, a small tributary of Back River in Baltimore County.
- Morantown**; village in Allegany County.
- Morgan**; creek, a small tributary of Chester River in Kent County.
- Morgan**; post village in Carroll County on the Baltimore and Ohio Railroad.
- Morgan**; run, a small tributary of North Branch of Patapsco River in Carroll County.
- Morganza**; post village in St. Mary County.
- Morgnec**; post village in Kent County.
- Morris**; pond in Wicomico County drained by Morris Prong, which flows into Tonytank Creek.
- Morris**; prong, a small tributary of Tonytank Creek in Wicomico County.
- Moscow Mill**; post village in Allegany County.
- Mosquito**; creek, a small tributary of Chesapeake Bay in Harford County.
- Motters**; post village in Frederick County on the Emmitsburg Railroad.
- Mountain**; small branch of Winters Run in Harford County.

**Mountain**; point in Anne Arundel County, projecting into mouth of Magothy River.

**Mountain**; post village in Harford County.

**Mountain Hill**; village in Harford County.

**Mountain Lake Park**; town in Garrett County on the Baltimore and Ohio Railroad. Population, 215.

**Mountain View**; village in Howard County.

**Mount Airy**; village in Carroll County on the Baltimore and Ohio Railroad. Population, 332.

**Mount Carmel**; post village in Baltimore County.

**Mount Ephraim**; village in Montgomery County.

**Mount Harmony**; post village in Calvert County on the Chesapeake Beach Railway.

**Mount Holly**; village in Dorchester County.

**Mount Hope**; village in Baltimore County on the Western Maryland Railroad.

**Mount Misery**; village in Anne Arundel County.

**Mount Pleasant**; village in Frederick County.

**Mount Savage**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.

**Mount Savage Junction**; station in Allegany County on the Baltimore and Ohio and the Cumberland and Pennsylvania railroads.

**Mount Vernon**; post village in Somerset County.

**Mountview**; post village in Howard County.

**Mount Vista**; post village in Baltimore County.

**Mount Washington**; village in Baltimore County.

**Mount Wilson**; post village in Baltimore County on the Western Maryland Railroad.

**Mount Zion**; village in Cecil County.

**Mud**; creek, a small tributary of Patuxent River in St. Mary County.

**Mud**; creek, a small tributary of Tred Avon River in Talbot County.

**Mud**; creek, a small tributary of Turville Creek in Worcester County.

**Muddy**; branch, a tributary of Potomac River in Montgomery County.

**Muddy**; creek, a small tributary of Big Annemessex River in Somerset County.

**Muddy**; creek, a small tributary of Chester River in Queen Anne County.

**Muddy**; creek, a small tributary of Choptank River in Talbot County.

**Muddy**; creek, a small tributary of Rhode River in Anne Arundel County.

**Muddy**; creek, a small tributary of Youghiogheny River in Garrett County.

**Muddy**; run, a small tributary of Herrington Creek in Garrett County.

**Mudlick**; hollow in Town Hill in Allegany County.

**Muirkirk**; post village in Prince George County on the Baltimore and Ohio Railroad.

**Mulberry**; point in Dorchester County, projecting into Nanticoke River.

**Mulberry**; point in Harford County, projecting into Chesapeake Bay.

**Mullinix**; post village in Montgomery County.

**Murley**; branch, a small tributary of Town Creek in Allegany County.

**Murmsco**; creek, a small tributary of Pocomoke River in Somerset County.

**Muskrattown**; village in Worcester County.

**Mutton**; small islands in Susquehanna River in Harford County.

**Mutual**; post village in Calvert County.

**Myersville**; post village in Frederick County.

**My Lady**; small branch of Carroll Branch in Baltimore County.

**Myrtle**; point in Somerset County, projecting into Big Annemessex River.

**Nabs**; creek, a small branch of Stony Creek in Anne Arundel County.

**Nailors**; small pond at junction of Little Burnt Branch and Wicomico River in Wicomico County.

**Nan**; cove, a small inlet of Patuxent River in Calvert County.

**Nanjemoy**; creek, a small tributary of Potomac River in Charles County.

- Nanjemoy**; post village in Charles County.
- Nanticoke**; point in Wicomico County, projecting into Wiconico River.
- Nanticoke**; post village in Wicomico County.
- Nanticoke**; river, heads in southern Delaware in several branches and flows southwest through Maryland into Tangier Sound, an arm of Chesapeake Bay.
- Narrow**; point in Queen Anne County, projecting into Prospect Bay.
- Nassawango**; large creek flowing through Wicomico and Worcester counties into Pocomoke River.
- Nat**; creek, a small branch of Mill Creek in St. Mary County.
- Neal**; sound, a narrow passage between the mainland and a small island in Charles County.
- Neavitt**; post village in Talbot County.
- Nebo**; mountain, a summit west of Savage River in Garrett County.
- Necker**; post village in Baltimore County.
- Neelsville**; village in Montgomery County.
- Neff**; run, a small tributary of Georges Creek in Allegany County.
- Negro**; mountain in Garrett County. Height, 2,800 feet.
- Nelson**; branch, a small tributary of Little Gunpowder Falls in Baltimore County.
- Nelson**; point in Talbot County, projecting into Choptank River.
- Neri**; post village in Allegany County.
- Newark**; post village in Worcester County.
- Newburg**; post village in Charles County.
- Newcomb**; creek, a small tributary of Miles River in Talbot County.
- Newcomb**; post village in Talbot County.
- New Germany**; post village in Garrett County.
- New Glatz**; post village in Prince George County.
- Newhope**; pond, a small inlet of Pocomoke River in Wicomico County.
- Newhope**; post village in Wicomico County.
- New London**; village in Frederick County.
- New Market**; town in Frederick County. Population, 360.
- New Midway**; post village in Frederick County on the Northern Central Railway.
- Newport**; bay, a small arm of Chincoteague Bay in Worcester County.
- Newport**; creek, a small branch of Trappe Creek in Worcester County.
- Newport**; neck, a strip of land lying between Spencer Cove and Trappe Creek in Worcester County.
- Newport**; post village in Charles County.
- New Step**; small branch of Horsepen Branch in Prince George County.
- Newton**; post village in Caroline County.
- Newtown**; neck, a narrow strip of land between Breton and St. Clement bays in St. Mary County.
- Newtown**; village in Kent County.
- New Valley**; village in Cecil County.
- New Windsor**; town in Carroll County on the Western Maryland Railroad. Population, 430.
- Nichols**; small mountain ridge in Allegany County.
- Nicholson**; village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Niles Mill**; village in Garrett County.
- Ninepin Bridge**; creek, a tributary of Pocomoke River in Worcester County.
- Norbeck**; post village in Montgomery County.
- Norman**; cove, a small inlet at mouth of Honga River in Dorchester County.
- Norman**; creek, a small tributary of Middle River in Baltimore County.
- Norman**; post village in Queen Anne County.
- Norrisville**; post village in Harford County.

- North**; small branch of Laurel Run in Garrett County.
- North**; branch, a tributary of Castleman River in Garrett County.
- North**; branch, a small tributary of Rock Creek in Montgomery County.
- North**; fork, a branch of Crabtree Creek in Garrett County.
- North**; fork, a small branch of Bens Branch in Frederick County.
- North**; fork, a small branch of Linganore Creek in Frederick County.
- North**; fork, a small branch of Sand Branch in Garrett County.
- North**; point in Talbot County, projecting into Eastern Bay.
- North**; run, a small tributary of South River in Anne Arundel County.
- North Branch**; village in Allegany County on the Baltimore and Ohio Railroad.
- Northbranch**; post village in Baltimore County.
- North Branch of Patapsco**; river on boundary of Carroll and Baltimore counties, tributary to Patapsco River.
- North Branch of Potomac**; river, the head branch of Potomac River, forming part of boundary between Maryland and West Virginia.
- Northeast**; branch, a small tributary to Harris Bay in Talbot County.
- Northeast**; small branch of Western Branch in Prince George County.
- Northeast**; cove, a small inlet of Holland Straits in Dorchester County.
- Northeast**; creek, a small tributary of Back River in Baltimore County.
- Northeast**; creek, a small tributary of Northeast River in Cecil County.
- Northeast**; small marshy island in Holland Straits in Dorchester County.
- Northeast**; river, a tributary to Chesapeake Bay in Cecil County.
- Northeast**; town in Cecil County. Population, 969.
- North Glade**; run, a small branch of Deep Creek in Garrett County.
- Northkey**; post village in Prince George County.
- North Point**; creek, a small tributary to Old Road Bay in Baltimore County.
- Northpoint**; post village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.
- Northwest**; branch, a small tributary of Anacostia River in Prince George County.
- Northwest**; branch, a small tributary to Harris Bay in Talbot County.
- Northwest**; harbor, an inlet of Patapsco River within limits of Baltimore City.
- Norwood**; post village in Montgomery County.
- Notch Cliff**; village in Baltimore County on the Maryland and Pennsylvania Railroad.
- Notre Dame**; station in Baltimore County on the Maryland and Pennsylvania Railroad.
- Nottingham**; post village in Prince George County.
- Nutwell**; post village in Anne Arundel County.
- Nydegger**; run, a small tributary of North Branch of Potomac River in Garrett County.
- Oak**; creek, a small branch of Miles Creek in Talbot County.
- Oak**; small marshy island in Assawoman Bay in Worcester County.
- Oak Crest**; village in Prince George County on Baltimore and Ohio Railroad.
- Oakdale**; post village in Montgomery County.
- Oak Grove**; village in Prince George County.
- Oakington**; village in Harford County on the Philadelphia, Baltimore and Washington Railroad.
- Oakland**; county seat of Garrett County on the Baltimore and Ohio Railroad. Population, 1,170.
- Oakland**; village in Baltimore County.
- Oakland Mills**; post village in Howard County.
- Oakley**; post village in St. Mary County.
- Oaks**; village in St. Mary County.
- Oakville**; post village in St. Mary County.



**Oakwood**; post village in Cecil County.

**Observatory**; hill, a summit in Little Mountain in Garrett County. Elevation, 2,767 feet.

**Ocean**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.

**Ocean City**; town in Worcester County on the Baltimore, Chesapeake and Atlantic Railway. Population, 365.

**Octoraro**; creek, a tributary of Susquehanna River rising in Pennsylvania and flowing through Cecil County.

**Octoraro**; village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.

**Odenton**; post village in Anne Arundel County on the Annapolis, Washington and Baltimore and the Philadelphia, Baltimore and Washington railroads.

**Oella**; post village in Baltimore County on the Baltimore and Ohio Railroad.

**Old Field**; point in Kent County, projecting into Sassafras River.

**Oldfield**; point in Cecil County, projecting into Elk River.

**Old Germantown**; village in Montgomery County.

**Old House**; cove, a small inlet of Little Annemessex River in Somerset County.

**Old Mill**; branch, a small tributary of Pocomoke River in Worcester County.

**Old Road**; bay, a small inlet of Patuxent River in Baltimore County.

**Oldtown**; post village in Allegany County.

**Old Womans**; gut, a small inlet of Chesapeake Bay in Harford County.

**Oliver**; point in Baltimore County, projecting into Gunpowder River.

**Olivet**; post village in Calvert County.

**Olney**; post village in Montgomery County.

**Omar**; post village in Anne Arundel County.

**Ona**; small branch of Big Pipe Creek in Carroll County.

**Ordinary**; point in Cecil County, projecting into Sassafras River.

**Oregon**; village in Baltimore County.

**Oriole**; post village in Somerset County.

**Orme**; post village in Prince George County.

**Osborne**; village in Harford County on the Philadelphia, Baltimore and Washington and the Baltimore and Ohio railroads.

**Otter**; creek, a small stream on Smith Island in Somerset County tributary to Chesapeake Bay.

**Otter**; small marshy island in Tangier Sound in Somerset County.

**Otter**; point in St. Mary County, projecting into Chesapeake Bay.

**Otter Point**; creek, a small tributary of Bush River in Harford County.

**Outward Tump**; small marshy island in Chincoteague Bay in Worcester County.

**Overshot**; run, a small tributary of Big Gunpowder Falls in Baltimore County.

**Overton**; post village in Kent County.

**Owens**; creek, a small tributary of Nanticoke River in Dorchester County.

**Owing Mills**; post village in Baltimore County on the Western Maryland Railroad.

**Owings**; post village in Talbot County on the Chesapeake Beach Railway.

**Owl**; branch, a small tributary of Little Falls Creek in Baltimore County.

**Oxenhill**; post village in Prince George County.

**Oxford**; town in Talbot County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,243.

**Oxon**; village in Prince George County.

**Oyster**; cove, a small inlet of Chester River.

**Oyster**; creek, a small tributary to Kedge Strait in Somerset County.

**Oyster**; small pond in marshes of Worcester County.

**Oyster Shell**; creek, a small tributary of Choptank River in Dorchester County.

**Pagan**; point in St. Mary County, projecting into St. Mary River.

- Palmers**; post village in St. Mary County on the Queen Anne's Railroad.
- Palmetto**; village in Somerset County.
- Pamosa**; post village in Allegany County.
- Panther**; branch, a small tributary of Gunpowder Falls in Baltimore County.
- Paradise**; village in Allegany County on the Philadelphia, Baltimore and Washington Railroad.
- Paramount**; post village in Washington County.
- Parish**; creek, a small tributary of West River in Anne Arundel County.
- Parker**; bay, an arm of Chincoteague Bay in Worcester County.
- Parker**; branch, a small tributary of Little Gunpowder Falls in Baltimore County.
- Parker**; creek, a small tributary to Chesapeake Bay in Calvert County.
- Parker**; small island in Herring Bay in Anne Arundel County.
- Parker**; neck, a narrow strip of land lying between Charles Creek and Honga River in Dorchester County.
- Parkhall**; post village in St. Mary County.
- Park Mills**; village in Frederick County.
- Parkton**; post village in Baltimore County on the Northern Central Railway.
- Parole**; post village in Anne Arundel County.
- Parran**; post village in Calvert County.
- Parson**; creek, a small tributary of Patuxent River in St. Mary County.
- Parson**; small island in Eastern Bay in Queen Anne County.
- Parsonsbury**; post village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.
- Patapsco**; river, a broad estuary whose head forms the harbor of Baltimore City and connects that city with Chesapeake Bay.
- Patapsco**; station in Anne Arundel County on the Philadelphia, Baltimore and Washington Railroad.
- Patapsco**; station in Baltimore County on the Baltimore and Ohio Railroad.
- Patapsco**; post village in Carroll County on the Western Maryland Railroad.
- Patapsco River**; neck, a strip of land lying between Back and Patapsco rivers in Baltimore County.
- Patience**; point in Calvert County, projecting into Patuxent River.
- Patterson**; creek, a small tributary of North Branch of Potomac River in Allegany County.
- Patterson Creek**; mountain ridge separating Patterson Creek and Dan Run in Allegany County.
- Pattys**; branch, a small tributary of Pocomoke River in Worcester County.
- Patuxent**; river, a tributary of Chesapeake Bay.
- Patuxent**; village in Anne Arundel County on the Philadelphia, Baltimore and Washington Railroad.
- Patuxent**; village in Charles County.
- Passerdyke**; creek, a tributary of Wicomico Creek on boundary between Wicomico and Somerset counties.
- Pawn**; run, a small tributary of Deep Creek in Garrett County.
- Pawpaw**; cove, a small inlet of Chesapeake Bay in Talbot County.
- Pawpaw**; creek, a small tributary of Chincoteague Bay in Worcester County.
- Pawpaw**; point in St. Mary County, projecting into Breton Bay.
- Pea**; ridge, a spur of Big Savage Mountain separating Bluelick and Mudlick runs in Garrett County.
- Peach**; point in Worcester County, projecting into St. Martin River.
- Peachblossom**; creek, a small tributary of Tred Avon River in Talbot County.
- Peapatch**; ridge, a spur of Meadow Mountain separating Big and Bear Pen runs in Garrett County.
- Pearce**; creek, a small tributary of Elk River in Cecil County.

- Pearce**; neck, a strip of land between Cabin John and Pearce creeks in Cecil County.
- Pearl**; branch, a small tributary of Chester River in Queen Anne County.
- Pearre**; post village in Washington County.
- Pearson**; post village in St. Mary County.
- Pecks**; creek, a small tributary to Assawoman Bay in Worcester County.
- Pecktonville**; village in Washington County.
- Peddler**; run, a small tributary of Susquehanna River in Harford County.
- Pekin**; post village in Allegany County.
- Peninsula Junction**; post village in Somerset County.
- Pen Knife**; point in Dorchester County, projecting into Nanticoke River.
- Perch**; creek, a small tributary of Elk River in Cecil County.
- Perkins**; creek, a small tributary of Shingle Landing Prong in Worcester County.
- Perryhall**; post village in Baltimore County.
- Perryman**; post village in Harford County on the Philadelphia, Baltimore and Washington Railroad.
- Perryville**; town in Cecil County on the Pennsylvania and the Philadelphia, Baltimore and Washington railroads. Population, 770.
- Persimmon**; creek, a small tributary of Patuxent River in St. Mary County.
- Persimmon**; small island in Susquehanna River in Cecil County.
- Persimmon**; point in Anne Arundel County, projecting into Magothy River.
- Persimmon**; point in Somerset County, projecting into Big Annemessex River.
- Peters**; creek, a small tributary of Quantico Creek in Wicomico County.
- Peters**; run, a small branch of Town Creek in Allegany County.
- Petersville**; village in Frederick County.
- Philip**; creek, a small branch of East Fork of Langford Bay in Kent County.
- Phillips**; creek, a small tributary of Choptank River in Dorchester County.
- Philopolis**; post village in Baltimore County.
- Phoenix**; post village in Baltimore County on the Northern Central Railway.
- Phoenix**; village in Allegany County.
- Piccowaxton**; creek, a small tributary of Potomac River in Charles County.
- Pickering**; creek, a small tributary of Front Wye River in Talbot County.
- Pigeon**; creek, a small tributary to Monie Bay in Somerset County.
- Pigskin**; small mountain ridge in Washington County extending into Pennsylvania.
- Pikes**; creek, a small tributary of Chincoteague Bay in Worcester County.
- Pikesville**; village in Baltimore County.
- Pilot**; village in Cecil County.
- Pindell**; post village in Anne Arundel County on the Chesapeake Beach Railway.
- Pine**; hill, a summit in Garrett County. Elevation, 2,600 feet.
- Pine**; small mountain ridge in Allegany County.
- Pine Hill**; village in Baltimore County.
- Pine Orchard**; village in Howard County.
- Pine Swamp**; run, a small tributary of Savage River in Garrett County.
- Piney**; branch, a small tributary of Mattawoman Creek in Charles County.
- Piney**; branch, a small tributary of Patapsco River in Carroll County.
- Piney**; creek, a small tributary of Chester River in Queen Anne County.
- Piney**; creek, a small tributary of Gunpowder Falls in Baltimore County.
- Piney**; creek, a small tributary of Monocacy River in Carroll County.
- Piney**; creek, a small tributary to Pine Creek Cove in Cecil County.
- Piney**; small marshy island at mouth of Manokin River in Somerset County.
- Piney**; small marshy island in Assawoman Bay in Worcester County.
- Piney**; small island in St. Martin River in Worcester County.

**Piney**; neck, a strip of land lying between Wye River and Eastern Bay in Queen Anne County.

**Piney**; mountain, a part of the Allegany Front in Allegany County. Elevation, 2,407 feet.

**Piney**; point in Baltimore County, projecting into Middle River.

**Piney**; point in Harford County, projecting into Gunpowder River.

**Piney**; point in Kent County, projecting into Chester River.

**Piney**; point in Queen Anne County, projecting into Prospect Bay.

**Piney**; point in St. Mary County, projecting into Potomac River. A light-house is erected thereon.

**Piney**; ridge, a spur of Green Mountain in Allegany County.

**Piney**; run, a small branch of Licking Run in Anne Arundel County.

**Piney**; run, a small branch of Muddy Creek in Garrett County.

**Piney**; run, a small branch of Western Run in Baltimore County.

**Piney**; run, a small tributary of Patapsco River in Carroll County.

**Piney Creek**; cove, a small inlet of Elk River in Cecil County.

**Pineygrove**; post village in Allegany County.

**Piney Island**; cove, a small inlet of Tangier Sound in Dorchester County.

**Pineypoint**; post village in St. Mary County.

**Piney Ridge**; run, a small tributary of Fifteenmile Run in Allegany County.

**Pinto**; post village in Allegany County.

**Piscataway**; creek, a tributary of Potomac River in Prince George County.

**Piscataway**; post village in Prince George County. Population, 95.

**Pisgah**; post village in Charles County.

**Pittsville**; post village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.

**Plaindealing**; creek, a small tributary of Tred Avon River in Talbot County.

**Plane No. Four**; post village in Frederick County on the Baltimore and Ohio Railroad.

**Pleasanthill**; post village in Cecil County.

**Pleasantina**; village in Anne Arundel County.

**Pleasant Valley**; run, a small tributary of North Branch of Castleman River in Garrett County.

**Pleasantville**; post village in Harford County.

**Plowders**; wharf on Wicomico River in St. Mary County.

**Plum**; branch, a small tributary of Nanticoke River in Dorchester County.

**Plum**; creek, a small tributary of Severn River in Anne Arundel County.

**Plum**; point in Calvert County, projecting into Chesapeake Bay.

**Plum**; point in Cecil County, projecting into Elk River.

**Plum**; point in Kent County, projecting into Chesapeake Bay.

**Plumpoint**; post village in Calvert County.

**Plumtree**; branch, a small tributary of Deer Creek in Harford County.

**Plumtree**; run, a small branch of Winters Run in Harford County.

**Pocomoke**; river on the peninsula heading in southern Delaware and flowing southwest into Chesapeake Bay.

**Pocomoke City**; town in Worcester County on the New York, Philadelphia, and Norfolk Railroad. Population, 2,124.

**Point**; branch, a small tributary of Anacostia River heading in Montgomery County and flowing through Prince George County.

**Point**; ridge, a spur of Jenkins Hill in Garrett County.

**Point Lookout**; creek, a small tributary of Potomac River in St. Mary County.

**Point No Point**; point in Dorchester County, projecting into Nanticoke River.

**Point No Point**; point in St. Mary County, projecting into Chesapeake Bay.

**Point of Rocks**; post village in Frederick County on the Baltimore and Ohio Railroad.

**Polish**; small mountain ridge in Allegany County.

**Pomfret**; post village in Charles County.

**Pomona**; post village in Kent County.

**Pomonkey**; creek, a small tributary of Potomac River in Charles County.

**Pomonkey**; post village in Charles County.

**Pond**; creek, a small tributary of Elk River in Cecil County.

**Pond**; neck, a strip of land lying between Pond and Pearce creeks in Cecil County.

**Pond**; point in St. Mary County, projecting into St. Mary River.

**Pons**; point in Dorchester County, projecting into Chesapeake Bay.

**Pool**; small, almost entirely marshy island in Chesapeake Bay in Kent County.

**Poole**; post village in Harford County.

**Poolesville**; town in Montgomery County. Population, 236.

**Pope**; creek, a small tributary of Potomac River in Charles County.

**Pope**; small marshy island in Chincoteague Bay in Worcester County.

**Pope Creek**; post village in Charles County on the Philadelphia, Baltimore and Washington Railroad.

**Poplar**; harbor, a small inlet of Chesapeake Bay in Talbot County.

**Poplar**; island, a bit of elevated dry land in sea marshes of Dorchester County.

**Poplar**; small island in Chesapeake Bay in Talbot County.

**Poplar**; point in Worcester County, projecting into St. Martin River.

**Poplar**; village in Baltimore County on the Baltimore and Ohio Railroad.

**Poplar Hill**; creek, a small tributary of Potomac River in St. Mary County.

**Poplar Lick**; run, a small tributary of Savage River in Garrett County.

**Poplars**; post village in Calvert County.

**Poplar Springs**; post village in Howard County.

**Porpoise**; creek, a small tributary of Choptank River in Talbot County.

**Porpoise**; pond, a small inlet of Assawoman Bay in Worcester County.

**Porter**; sand bar in Back River in Baltimore County.

**Porter**; creek, a small tributary of Miles River in Talbot County.

**Porter**; village in Allegany County.

**Port Deposit**; town in Cecil County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,575.

**Port Herman**; town on Elk River in Cecil County.

**Portobello**; point in St. Mary County, projecting into St. Mary River.

**Port Republic**; post village in Calvert County.

**Port Tobacco**; creek, a small tributary of Port Tobacco River in Charles County.

**Port Tobacco**; post village in Charles County.

**Port Tobacco**; river, a tributary of Potomac River in Charles County.

**Port Tobacco**; station in Charles County on the Philadelphia, Baltimore and Washington Railroad.

**Potomac**; post village in Montgomery County.

**Potomac**; river, the largest in Maryland, heading in the southwestern part of the State, near Fairfax Stone, where it is known as the North Branch; thence it flows northeast as far as Cumberland, then turns to the southeast and is joined by the South Branch. Below the junction it flows northeast as far as Hancock, and then takes a southeast course again. At Harpers Ferry it is joined by the Shenandoah on the south and passes the Blue Ridge. Eighteen miles above Washington are the Great Falls, and below that a succession of rapids and falls extending to the District of Columbia. In this stretch it passes the fall line. Below Washington the course is southwest for 40 miles, when it again turns to the east and southeast and enters Chesapeake Bay at Point Lookout. Below Washington it is tidal, has little current, and forms an estuary. The entire drainage basin of the river is 14,479 square miles.

- Potomac**; station in Allegany County on the Baltimore and Ohio and the West Virginia Central and Pittsburg railroads.
- Potter**; creek, a small tributary of Potomac River in St. Mary County.
- Powell**; landing on Wye River in Talbot County.
- Powellsville**; post village in Wicomico County.
- Powhatan**; village in Baltimore County.
- Pratt**; post village in Allegany County.
- Preston**; post village in Caroline County on the Baltimore, Chesapeake and Atlantic Railway.
- Prettyboy**; branch, a small tributary of Gunpowder Falls in Baltimore County.
- Price**; creek, a small tributary of St. Mary River in St. Mary County.
- Prices**; post village in Queen Anne County.
- Priceville**; village in Baltimore County.
- Prickly**; point in Somerset County, projecting into Manokin River.
- Priests**; point in St. Mary County, projecting into St. Mary River.
- Prince Fredericktown**; county seat of Calvert County.
- Prince George**; county, organized in 1645, is bounded on the northeast and east by Patuxent River, south by Charles County, west by Potomac River, and on the northwest by the District of Columbia and Montgomery County. The surface is rolling and well supplied with springs and running streams flowing into the two bordering rivers. The area is 482 square miles, of which more than one-half, or 174,273 acres, was under cultivation in 1900. The population for the same year was 29,898. The county seat is Upper Marlboro. It contains also the towns of Hyattsville and Laurel, with populations 1,222 and 2,079 respectively. The average magnetic declination in the county in 1900 was 4° 50' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.
- Princess Anne**; county seat of Somerset County on the New York, Philadelphia and Norfolk Railroad. Population, 857.
- Principio**; creek, a small tributary of Furnace Creek in Cecil County.
- Principio Furnace**; post village in Cecil County.
- Principio Station**; station in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Probasco**; landing on Wye River in Talbot County.
- Prospect**; bay, a small arm of Eastern Bay in Queen Anne County.
- Prospect**; village in Harford County.
- Protestant**; point in St. Mary County, projecting into Breton Bay.
- Providence Mill**; post village in Cecil County on the Baltimore and Ohio Railroad.
- Pry**; cove, a small inlet of Holland Straits in South Marsh in Somerset County.
- Pry**; small marshy island in Holland Straits in Somerset County.
- Pumphrey**; village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Punch**; point in Talbot County, projecting into Eastern Bay.
- Punch Island**; creek, a small tributary of Chesapeake Bay in Dorchester County.
- Pungers**; small creek in South Marsh in Somerset County tributary to Holland Straits.
- Purdum**; post village in Montgomery County.
- Purnell**; bay, an arm of Chincoteague Bay in Worcester County.
- Purnell**; point in Worcester County, projecting into Chincoteague Bay.
- Purnell**; pond in Worcester County drained by Pattys Branch, a tributary of Pocomoke River.
- Purnell**; pond, an inlet of Chincoteague Bay in Worcester County.
- Purslane**; run, a small tributary of Potomac River.
- Pusey**; branch, a small tributary of Dividing Creek in Worcester County.

**Putnam**; village in Harford County.

**Puzzley**; run, a stream rising in Garrett County and flowing through Pennsylvania into Whites Creek.

**Pylesville**; post village in Harford County on the Maryland and Pennsylvania Railroad.

**Quaker**; neck, a strip of land lying between East Fork of Langford Bay and Chester River in Kent County.

**Quaker**; wharf on Chester River in Kent County.

**Quantico**; creek, a tributary of Nanticoke River in Wicomico County.

**Queen Anne**; county, organized in 1706, is situated on the eastern shore of Chesapeake Bay, extending from the Delaware State line on the east to Chesapeake Bay on the west, and is bounded on the north by Chester River and south by Talbot and Caroline counties. The surface is generally low and level, and is drained by numerous creeks. The area is 376 square miles, of which almost three-fourths, or 172,396 acres, was under cultivation in 1900. The population for the same year was 18,364. The county seat is Centerville, with a population of 1,231 inhabitants in 1900. The average magnetic declination in the county in 1900 was 5° 35' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Queen Anne**; post village in Queen Anne County on the Philadelphia, Baltimore and Washington and the Queen Anne's railroads.

**Queenstown**; creek, a small tributary of Chester River in Queen Anne County.

**Queenstown**; town in Queen Anne County on the Queen Anne's Railroad. Population, 374.

**Queen Tree**; landing on Patuxent River in St. Mary County.

**Queponco**; village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.

**Quince Orchard**; post village in Montgomery County.

**Raccoon**; creek, a small tributary to Fishing Bay in Dorchester County.

**Raccoon**; point in Somerset County, projecting into Manokin River.

**Ragged**; mountain, a spur of Polish Mountain in Allegany County.

**Ragged**; point in Dorchester County, projecting into Little Choptank River.

**Raisins**; wharf on Sassafras River in Kent County.

**Randallstown**; post village in Baltimore County.

**Randolph**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Raspeburg**; post village in Baltimore County.

**Rattlesnake**; small marshy island in Chincoteague Bay in Worcester County.

**Rattlesnake**; landing on Chincoteague Bay in Worcester County.

**Rawlings**; post village in Allegany County on the Baltimore and Ohio, and the West Virginia Central and Pittsburgh railroads.

**Raxton**; village in Baltimore County.

**Rayville**; village in Baltimore County.

**Reason**; run, a small stream rising in Garrett County and flowing through Pennsylvania into Youghiogheny River.

**Reckord**; post village in Baltimore County.

**Red**; point in Cecil County, projecting into Northeast River.

**Red**; outlying broken ridge west of and parallel to Meadow Mountain in Garrett County.

**Red**; run, a small branch of Big Piney Run in Garrett County.

**Reddy**; small branch of Hawlings River in Montgomery County.

**Redgate**; post village in St. Mary County.

**Red House**; branch, a small tributary of Tuckahoe Creek in Queen Anne County.

**Red House**; creek, a small tributary of Back River in Baltimore County.

**Redhouse**; post village in Garrett County.

- Redland**; post village in Montgomery County.
- Red Lion**; branch, a small tributary of Chester River in Queen Anne County.
- Reed**; creek, a small tributary of Chester River in Queen Anne County.
- Reeder**; wharf on Patuxent River in St. Mary County.
- Reeds**; creek, a small tributary of Choptank River in Talbot County.
- Reeds Grove**; post village in Somerset County.
- Reedy**; small marshy island in Assawoman Bay in Worcester County.
- Reedy**; small marshy island in Isle of Wight Bay in Worcester County.
- Rehobeth**; post village in Somerset County.
- Reid**; post village in Washington County on the Western Maryland Railroad.
- Reistertown**; post village in Baltimore County.
- Relay**; station in Baltimore County on the Baltimore and Ohio Railroad.
- Renix**; village in Allegany County on the Baltimore and Ohio Railroad.
- Renonco**; creek, a small tributary of Nanticoke River in Wicomico County.
- Revell**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Revels**; neck, a strip of land lying between Kings Creek and Back River in Somerset County.
- Rewastico**; creek, a tributary of Nanticoke River in Wicomico County.
- Reybold**; wharf on Elk River in Cecil County.
- Rhine**; creek, a tributary of Cherry Creek in Garrett County.
- Rhode**; hill, a summit in Garrett County.
- Rhode**; river, a tributary of West River in Anne Arundel County.
- Rhodesdale**; post village in Dorchester County on the Baltimore, Chesapeake and Atlantic Railway.
- Rich**; small marshy island in Assawoman Bay in Worcester County.
- Richardsmere**; post village in Cecil County.
- Richland**; cove, a small inlet of Chesapeake Bay in Dorchester County.
- Richland**; point in Dorchester County, projecting into Chesapeake Bay.
- Rick**; neck, a strip of land between Elk and Sassafras rivers in Cecil County.
- Rickett**; point in Harford County, projecting into Gunpowder River.
- Ricks**; point in Worcester County, projecting into Chincoteague Bay.
- Rider**; post village in Baltimore County.
- Ridge**; post village in St. Mary County.
- Ridgely**; post village in Caroline County on the Philadelphia, Baltimore and Washington Railroad.
- Ridgeville**; village in Carroll County.
- Ridgley**; cove, a small inlet of Middle Branch of Patapsco River within chartered limits of Baltimore City.
- Ridgley**; hill, a summit in Garrett County. Height, 2,617 feet.
- Ridout**; creek, a small tributary of Whitehall River in Anne Arundel County.
- Riggs Mills**; village in Prince George County.
- Rioll**; cove, a small inlet of Little Choptank River in Dorchester County.
- Riley**; cove, a small inlet of Chincoteague Bay in Worcester County.
- Ripley**; post village in Charles County.
- Rising Sun**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad. Population, 382.
- Ritchie**; post village in Prince George County on the Chesapeake Beach Railway.
- River**; hill, a summit in Garrett County. Elevation, 2,700 feet.
- Riverdale**; post village in Prince George County on the Baltimore and Ohio Railroad.
- Riverside**; post village in Charles County.
- Riverside**; village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.



- River Springs**; post village in St. Mary County.  
**Riverton**; post village in Wicomico County.  
**Riverview**; post village in Anne Arundel County.  
**River View**; village in Prince George County.  
**Rives**; village in Prince George County.  
**Roach**; point in Cecil County, projecting into Northeast River.  
**Roaring**; point in Wicomico County, projecting into Nanticoke River.  
**Roberts**; small island in Susquehanna River in Harford County.  
**Roberts**; post village in Queen Anne County.  
**Roberts**; village in Allegany County on the Baltimore and Ohio Railroad.  
**Robin**; cove, a small inlet of Chester River in Queen Anne County.  
**Robin**; point in Harford County, projecting into Chesapeake Bay.  
**Robins**; branch, a small tributary of Choptank River in Caroline County.  
**Robins**; creek, a small tributary to Chincoteague Bay in Worcester County.  
**Robins**; marsh in Chincoteague Bay in Worcester County.  
**Robinson**; neck, a strip of land between Beaverdam and St. John creeks in Dorchester County.  
**Robinson**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.  
**Rock**; creek, a small branch of Carroll Creek in Frederick County.  
**Rock**; creek, a small tributary to Chesapeake Bay in Somerset County.  
**Rock**; creek, a small tributary of Potomac River in Montgomery County.  
**Rock**; creek, a small tributary of Patuxent River in Calvert County.  
**Rock**; creek, a small tributary of Tangier Sound in Somerset County.  
**Rock**; creek, a small tributary of Patuxent River in Prince George County.  
**Rock**; creek, a small tributary of Patapsco River in Anne Arundel County.  
**Rock**; hole, a small inlet of Tangier Sound in Somerset County.  
**Rock**; point in Anne Arundel County, projecting into Patapsco River.  
**Rock**; point in Charles County, projecting into Wicomico River.  
**Rock**; run, a small branch of Buffalo Creek in Garrett County.  
**Rock**; run, a small tributary of Susquehanna River in Cecil County.  
**Rock**; run, a small tributary of Susquehanna River in Harford County.  
**Rockawalking**; creek, a tributary of Wicomico River in Wicomico County.  
**Rockawalking**; post village in Wicomico County.  
**Rockburn**; branch, a small tributary of Patapsco River in Howard County.  
**Rockdale**; village in Baltimore County.  
**Rock Gully**; creek, a small branch of Evitts Creek in Allegany County.  
**Rockhall**; creek, a small tributary to Chesapeake Bay in Kent County.  
**Rockhall**; landing on Chesapeake Bay in Kent County.  
**Rockhall**; post village in Kent County.  
**Rockland**; village in Baltimore County on the Northern Central Railway.  
**Rockpoint**; post village in Charles County.  
**Rock Run**; village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.  
**Rocks**; post village in Harford County.  
**Rocksprings**; post village in Cecil County.  
**Rockville**; county seat of Montgomery County on the Baltimore and Ohio Railroad. Population, 1,110.  
**Rocky**; branch, a small tributary of Little Gunpowder Falls in Harford County.  
**Rocky**; point in Baltimore County, projecting into Back River.  
**Rocky**; point in Cecil County, projecting into Chesapeake Bay.  
**Rockyridge**; post village in Frederick County on the Emmitsburg and the Western Maryland railroads.  
**Roe**; post village in Queen Anne County

- Rogers**; village in Baltimore County on the Northern Central Railway.
- Rogue Harbor**; branch, a small tributary of Little Patuxent River in Anne Arundel County.
- Rogues**; harbor, a small inlet of Elk River in Cecil County.
- Rohrersville**; post village in Washington County on the Baltimore and Ohio Railroad.
- Rollin**; village in Calvert County.
- Rolphs**; post village in Queen Anne County.
- Roman**; nose, a mountain ridge in Garrett County. Elevation, 3,006 feet.
- Romney**; creek, a small tributary to Chesapeake Bay in Harford County.
- Rosaryville**; post village in Prince George County.
- Rosecroft**; post village in Prince George County.
- Rosedale**; village in Baltimore County on the Baltimore and Ohio Railroad.
- Rose Neck**; point in Dorchester County, projecting into Fishing Bay.
- Roslyn**; post village in Baltimore County.
- Ross**; small island in Susquehanna River in Harford County.
- Rossville**; post village in Baltimore County on the Baltimore and Ohio Railroad.
- Rosten**; creek, a small tributary of Chester River in Queen Anne County.
- Rough**; small island in Susquehanna River in Cecil County.
- Round**; bay, a small inlet of Severn River in Anne Arundel County.
- Round Glade**; run, a small tributary of Youghiogheny River in Garrett County.
- Round Bay**; village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Roundtop**; hill, a summit in Tonoloway Ridge. Elevation, 1,388 feet.
- Roundtop**; wharf on Chester River in Kent County.
- Rover**; post village in Howard County.
- Rowie**; village in Prince George County.
- Rowland**; small island in Susquehanna River in Harford County.
- Rowlandsville**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Rowley**; cove, an inlet of Chincoteague Bay in Worcester County.
- Roxbury**; post village in Washington County on the Baltimore and Ohio Railroad.
- Roxbury Mills**; post village in Howard County.
- Royal Oak**; post village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.
- Royal Oak**; village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.
- Royston**; small island at mouth of Broad Creek in Talbot County.
- Ruhl**; village in Baltimore County.
- Rush**; village in Allegany County.
- Rush**; post village in Allegany County.
- Rushville**; village in Montgomery County.
- Russell**; branch, a small tributary of Dry Seneca Creek in Montgomery County.
- Ruthsburg**; post village in Queen Anne County.
- Rutland**; post village in Anne Arundel County.
- Rutledge**; post village in Harford County.
- Ryceville**; post village in Charles County.
- Sabellasville**; post village in Frederick County on the Western Maryland Railroad.
- Sackertown**; village in Somerset County.
- St. Augustine**; post village in Cecil County.
- St. Catherine**; small island in Potomac River in St. Mary County.
- St. Catherine**; small island in Susquehanna River in Harford County.
- St. Catherine**; sound, a small inlet of Potomac River in St. Mary County.
- St. Clement**; bay, an inlet of Potomac River in St. Mary County.

- St. Clement;** creek, a tributary to St. Clement Bay in St. Mary County.  
**St. Clement Bay;** village in St. Mary County.  
**St. George;** creek, a small tributary of Potomac River in St. Mary County.  
**St. George;** island in Potomac River in St. Mary County.  
**St. George;** post village in Baltimore County.  
**St. George Island;** post village in St. Mary County.  
**St. Helena;** small island in Round Bay in Anne Arundel County.  
**St. Inigoes;** creek, a small tributary of St. Mary River in St. Mary County.  
**St. Inigoes;** post village in St. Mary County.  
**St. James Corners;** village in Baltimore County.  
**St. James School;** post village in Washington County.  
**St. Jerome;** creek, a small tributary to Chesapeake Bay in St. Mary County.  
**St. Jerome;** point in St. Mary County, projecting into Chesapeake Bay.  
**St. John;** creek, a small tributary of Patuxent River in Calvert County.  
**St. John;** creek, a small tributary of Punch Island Creek in Dorchester County.  
**St. John;** creek, a small tributary of Patuxent River in St. Mary County.  
**St. John;** rock, a summit on Big Savage Mountain. Elevation, 2,930 feet.  
**St. Leonard;** creek, a small tributary of Patuxent River in Calvert County.  
**St. Leonard;** post village in Calvert County.  
**St. Margaret;** small island in Wicomico River in St. Mary County.  
**St. Margaret;** village in Anne Arundel County.  
**St. Martin;** post village in Worcester County on the Baltimore, Chesapeake and Atlantic Railway.  
**St. Mary;** county, settled in 1634, occupies the southeast extremity of the western shore of the Chesapeake Bay, and forms a peninsula bounded on the southwest by Potomac River, on the northeast by the bay and Patuxent River, and northwest by Charles County. The surface of the county is varied, the northwestern portion being undulated, while the southeastern portion is mostly level and low. It is well drained by numerous creeks and branches. The area is 372 square miles, of which nearly one-half, or 109,553 acres, was under cultivation in 1900. The population for the same year was 17,182. The county seat is Leonardtown. The average magnetic declination in the county in 1900 was 4° 30'. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 55° and 60°.  
**St. Mary;** post village in St. Mary County.  
**St. Mary;** river, an estuary flowing into Potomac River near its mouth.  
**St. Michaels;** post village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway. Population, 1,043.  
**St. Patrick;** creek, a small tributary to St. Clement Bay in St. Mary County.  
**St. Peters;** creek, a small tributary of Manokin River in Somerset County.  
**St. Pierre;** small marshy island in Manokin River in Somerset County.  
**St. Pierre;** point in Somerset County, projecting into Manokin River.  
**St. Stephen;** village in Somerset County.  
**Salem;** post village in Dorchester County.  
**Salisbury;** county seat of Wicomico County on the Baltimore, Chesapeake and Atlantic and the New York, Philadelphia and Norfolk railroads. Population, 4,277.  
**Salt Block;** mountain in Garrett County. Elevation, 2,768 feet.  
**Saltblock;** run, a small tributary of Youghiogheny River in Garrett County.  
**Saltgrass;** point in Worcester County, projecting into St. Martin River.  
**Saltpeter;** creek, a small tributary of Bush River in Baltimore County.  
**Sampson;** rock, a summit in Big Savage Mountain. Elevation, 2,942 feet.  
**Sams;** creek, a small tributary of Piney Branch in Carroll County.  
**Sand;** run, a tributary of North Branch of Potomac River in Garrett County.

- Sandgates**; post village in St. Mary County.
- Sandy**; branch, a small tributary of Potomac River in Montgomery County.
- Sandy**; point in Anne Arundel County, projecting into Chesapeake Bay.
- Sandy**; point in Calvert County, projecting into Patuxent River.
- Sandy**; point in Harford County, projecting into Bush River.
- Sandy**; point in Harford County, projecting into Chesapeake Bay.
- Sandy**; point in Worcester County, projecting into Chincoteague Bay.
- Sandy**; point in Worcester County, projecting into Sinepuxent Bay.
- Sandy Bottom**; village in Kent County.
- Sandy Hill**; landing on Nanticoke River in Wicomico County.
- Sandy Hook**; village in Washington County on the Baltimore and Ohio Railroad.
- Sandy Point**; small marshy island in Sinepuxent Bay in Worcester County.
- Sandyspring**; post village in Montgomery County.
- Sang**; run, a small tributary of Youghiogheny River in Garrett County.
- Sang Run**; post village in Garrett County.
- Sassafras**; post village in Kent County.
- Sassafras**; neck, a strip of land lying between Sassafras and Bohemia rivers in Cecil County.
- Sassafras**; river on boundary between Cecil and Kent counties, a tributary to Chesapeake Bay.
- Saunders**; point in Anne Arundel County, projecting into Chesapeake Bay.
- Savage**; post village in Howard County on the Baltimore and Ohio Railroad.
- Savage**; river, tributary of North Branch of Potomac River in Garrett County.
- Savannah**; small lake drained by Jack Creek, a tributary of Nanticoke River in Dorchester County.
- Saw Mill**; branch, a small tributary of Furnace Creek in Anne Arundel County.
- Sawmill**; branch, a small tributary of Little Gunpowder Falls in Baltimore County.
- Sawmill**; creek, a small tributary of Sassafras River in Kent County.
- Sawney**; cove, a small inlet of Chesapeake Bay in Somerset County.
- Sawpit**; run, a small tributary of Town Creek in Allegany County.
- Scaffold**; creek, a small tributary of West River in Anne Arundel County.
- Scaggsville**; post village in Howard County.
- Scarboro**; creek, a small tributary to Chincoteague Bay in Worcester County.
- Scarboro**; post village in Harford County on the Philadelphia, Baltimore and Washington Railroad.
- Scarff**; post village in Harford County.
- Schoolhouse**; hill in Harford County.
- Schoolhouse**; run, a small tributary of Castleman River in Garrett County.
- Scotchman**; creek, a small tributary of Bohemia River in Cecil County.
- Scotland**; post village in St. Mary County.
- Scott**; point in Somerset County, projecting into Big Annemessex River.
- Scott Level**; village in Baltimore County.
- Scotts**; landing on Chincoteague Bay in Worcester County.
- Seabrook**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Seat Pleasant**; post village in Prince George County.
- Sea Wall Junction**; village in Anne Arundel County on the Baltimore and Ohio Railroad.
- Second**; creek, a small tributary of Patuxent River in St. Mary County.
- Second Mine**; branch, a small tributary of Gunpowder Falls in Baltimore County.
- Secretary**; creek, a small tributary of Choptank River in Dorchester County.
- Secretary**; village in Dorchester County. Population, 410.
- Selby**; bay, a small inlet at mouth of South River in Anne Arundel County.
- Selbysport**; post village in Garrett County on the Baltimore and Ohio Railroad.

**Sellman**; post village in Montgomery County.

**Seneca**; creek, a small tributary to Chesapeake Bay in Baltimore County.

**Seneca**; point in Cecil County, projecting into Northeast River.

**Seneca**; post village in Montgomery County.

**Severn**; post village in Anne Arundel County on the Philadelphia, Baltimore and Washington Railroad.

**Severn**; river in Anne Arundel County flowing into Chesapeake Bay.

**Severn**; run, a small tributary of Severn River in Anne Arundel County.

**Sewell**; post village in Harford County on the Baltimore and Ohio Railroad.

**Shad**; point in Wicomico County, projecting into Wicomico River.

**Shadow Hall**; point in Cecil County, projecting into Furnace Creek.

**Shadyside**; post village in Anne Arundel County.

**Shaft**; post village in Allegany County.

**Shallow**; creek, a small tributary of Patapsco River in Baltimore County.

**Shamburg**; village in Baltimore County.

**Shane**; post village in Baltimore County.

**Sharon**; post village in Harford County on the Maryland and Pennsylvania Railroad.

**Sharperville**; village in Prince George County.

**Sharps**; small island in Chesapeake Bay in Dorchester County.

**Sharps**; point in Wicomico County, projecting into Wicomico River.

**Sharpsburg**; town in Washington County. Population, 1,030.

**Sharptown**; town in Wicomico County. Population, 529.

**Shaw**; bay, a small inlet of Eastern Bay in Talbot County.

**Shawan**; village in Baltimore County.

**Shawsville**; village in Harford County.

**Sheepshead**; harbor, an inlet of Kedge Straits in Somerset County.

**Shellcorn**; wharf on Sassafras River in Kent County.

**Shelltown**; post village in Somerset County.

**Sheppard**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.

**Sheridan**; point in Calvert County, projecting into Patuxent River.

**Sheridan Point**; post village in Calvert County.

**Sherwood**; village in Baltimore County on the Northern Central Railway.

**Sherwood**; post village in Talbot County.

**Shields**; run, a small tributary of North Branch of Potomac River in Garrett County.

**Shingle**; landing on Shingle Landing Prong in Worcester County.

**Shingle Landing**; prong, a small tributary of St. Martin River in Worcester County.

**Ship**; cove, a small inlet of Chester River in Kent County.

**Shipley**; point in Cecil County, projecting into Furnace Creek.

**Shipley**; village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.

**Shipping**; creek, a small tributary to Eastern Bay in Queen Anne County.

**Shipping**; point in St. Mary County, projecting into St. Clement Bay.

**Shirtpond**; cove, a small inlet at mouth of Big Annemessex River in Somerset County.

**Shoal**; creek, a small tributary of Choptank River in Dorchester County.

**Shock Mills**; village in Carroll County.

**Short**; point in St. Mary County, projecting into St. Martin River.

**Shorters**; landing on Backgarden Creek in Dorchester County.

**Short Line**; junction, a station in Harford County on the Baltimore and Annapolis Short Line and the Bay Ridge railroads.

**Showell**; post village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.

**Shrewsbury**; neck, a strip of land lying between Turner and Freeman creeks in Kent County.

**Shriver**; ridge, a continuation of Knobby Mountain of West Virginia separating two small branches of North Branch of Potomac River.

**Shures Landing**; post village in Harford County.

**Sickle**; hill on boundary between West Virginia and Garrett County. Elevation, 2,400 feet.

**Sideling**; hill, a mountain ridge in Washington County extending into Pennsylvania.

**Sideling Hill**; creek, a tributary of Potomac River on boundary between Allegany and Washington counties.

**Siebert**; post village in Allegany County.

**Silesia**; post village in Prince George County.

**Silver**; run, a small tributary of Big Pipe Creek in Carroll County.

**Silverhill**; post village in Prince George County.

**Silver Spring**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Simpsonville**; post village in Howard County.

**Sinepuxent**; neck, a strip of land lying between Sinepuxent and Newport bays in Worcester County.

**Sinepuxent**; village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.

**Sines**; post village in Garrett County.

**Singer**; post village in Harford County.

**Singerly**; post village and station in Cecil County on the Baltimore and Ohio Railroad.

**Skipnish**; village in Garrett County on the Baltimore and Ohio Railroad.

**Skipper**; creek, a small tributary of Chester River in Kent County.

**Skipton**; creek, a small tributary of Wye River in Talbot County.

**Skipton**; post village in Talbot County.

**Sledds**; point in Anne Arundel County, projecting into Curtis Bay.

**Slidell**; post village in Montgomery County.

**Sligo**; post village in Montgomery County.

**Sligo**; small branch of Northwest Branch in Prince George County.

**Smith**; cove, a small inlet of Choptank River in Dorchester County.

**Smith**; cove, a small inlet of Middle Branch of Patapsco River within limits of Baltimore city.

**Smith**; creek, a small tributary of Potomac River in St. Mary County.

**Smith**; small island in Chesapeake Bay in Somerset County.

**Smith**; point in Talbot County, projecting into Harris Creek.

**Smithsburg**; town in Washington County. Population, 462.

**Smithville**; post village in Caroline County.

**Smithville**; village in Dorchester County.

**Smithville**; village in Kent County.

**Smokehouse**; cove, a small inlet of St. Martin River in Worcester County.

**Snaggy**; hill in Garrett County.

**Snake**; small island in Susquehanna River in Harford County.

**Snow Hill**; county seat of Worcester County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,596.

**Snowy**; creek, a small branch of Youghiogheny River in Garrett County.

**Sollers**; point in Baltimore County, projecting into Patapsco River.

**Sollers**; post village in Calvert County on the Northern Central Railway.

**Solley**; post village in Anne Arundel County.

**Solomon**; ridge, a spur of Meadow Mountain separating Dry and Big runs in Garrett County.

**Solomons**; post village in Calvert County.

**Solomons Lump**; small island in Kedge Straits in Somerset County. A light-house is erected thereon.

**Somerset**; county, is the southernmost bay county of the Eastern Shore. It is bounded on the north by Wicomico County, east by Worcester County, south by Pocomoke River and Sound, and west by Chesapeake Bay. The surface is generally level, but sufficiently undulating to afford good drainage. The area is 362 square miles, of which more than a third, or 82,650 acres, was under cultivation in 1900. The population for the same year was 25,193. The county seat is Princess Anne. It also contains the town of Crisfield, of 3,165 inhabitants in 1900. The average magnetic declination in the county in 1900 was 5° 00'. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 55° and 60°.

**Somerset**; creek, a small tributary of Wicomico Creek in Somerset County.

**Sopers**; creek, a small branch of Little Bennetts Creek in Montgomery County.

**Sopers**; hill in Montgomery County. Elevation, 469.

**Sotterly**; point in St. Mary County, projecting into Patuxent River.

**Sotterly**; post village in St. Mary County.

**South**; branch, a tributary of Bear Creek in Garrett County.

**South**; branch, a tributary of Shingle Landing Prong in Worcester County.

**South**; branch, a tributary of Castleman River in Garrett County.

**South**; branch, a tributary of Laurel Run in Garrett County.

**South**; fork, a branch of Linganore Creek in Frederick County.

**South**; fork, a tributary of Bens Creek in Frederick County.

**South**; fork, a tributary of Green Run in Wicomico County.

**South**; fork, a tributary of Sand Run in Garrett County.

**South**; hammock, small bits of marshy land in Assawoman Bay in Worcester County.

**South**; large marshy island in Somerset County between Holland and Kedge straits.

**South**; river in Anne Arundel County flowing into Chesapeake Bay.

**South Branch of Patapsco**; river, on boundary between Howard and Carroll counties.

**South Cumberland**; village in Allegany County.

**Southeast**; creek, a small tributary of Chester River in Queen Anne County.

**South River**; post village in Anne Arundel County.

**South Tuscarora**; creek, a small tributary of Potomac River in Frederick County.

**Southwest**; small branch of Western Branch in Prince George County.

**Spaniards**; neck, a strip of land lying between Chester and Corsica rivers in Queen Anne County.

**Sparks**; village in Baltimore County on the Northern Central Railway.

**Sparrow**; point in Baltimore County, projecting into Patapsco River.

**Sparrow Point**; town in Baltimore County on the Northern Central Railway.

**Spaw**; creek, a small tributary to Annapolis Roads in Anne Arundel County.

**Spedden**; wharf on Hudson Creek in Dorchester County.

**Speelman Mills**; village in Garrett County.

**Spence**; cove, small inlet of Newport Bay in Worcester County.

**Spence**; post village in Worcester County.

**Spencer**; creek, a small tributary of Edge Creek in Talbot County.

**Spencer**; creek, a small tributary of Miles River in Talbot County.

**Spencer**; small island in Susquehanna River in Harford County.

**Spencers**; wharf on Town Creek in St. Mary County.

**Spencerville**; post village in Montgomery County.

**Spesutie**; large, almost entirely marshy island in Chesapeake Bay in Harford County.

**Spesutie**; narrows, a passageway separating Spesutie Island from the mainland in Harford County.

**Spielman**; post village in Washington County.

**Spiker**; run, a small tributary of Castleman River in Garrett County.

**Spook**; hill in Baltimore County.

**Spring**; creek, a small tributary of Choptank River in Caroline County.

**Spring**; creek, a small tributary of Patuxent River in St. Mary County.

**Spring**; small marshy island in Holland Straits in Dorchester County.

**Springfield**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Springhill**; post village in Charles County.

**Springlick**; run, a small tributary of Crabtree Creek in Garrett County.

**Spry**; small marshy island at mouth of Gunpowder River in Harford County.

**Squirrel Neck**; run, a small tributary of Georges Creek in Allegany County.

**Stabler**; hill in Montgomery County. Elevation, 571 feet.

**Stablersville**; village in Baltimore County.

**Stafford**; post village in Harford County.

**Stanley**; run, a small tributary of Swanson Creek in Prince George County.

**Stansberry**; point in Baltimore County, projecting into Back River.

**Starkley Corner**; village in Queen Anne County.

**Staub**; run, a small tributary of Georges Creek in Allegany County.

**Steele**; small island in Susquehanna River in Cecil County.

**Stemmer**; run, a small branch of Northeast Creek in Baltimore County.

**Stephensville**; post village in Queen Anne County.

**Stepney**; post village in Harford County on the Baltimore and Ohio Railroad.

**Sterrerr**; small island in Susquehanna River in Cecil County.

**Stevenson**; post village in Baltimore County on the Northern Central Railway.

**Steves Island**; village in Worcester County.

**Stewart**; neck, a strip of land lying between Kings and Jones creeks and Manokin River in Somerset County.

**Still**; small pond at junction of Churn and Stillpond creeks in Kent County.

**Stillpond**; creek, a small tributary to Still Pond in Kent County.

**Stillpond**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Stirrup**; run, a small branch of Deer Creek in Harford County.

**Stockton**; town in Worcester County.

**Stoddart**; point in Charles County, projecting into Wicomico River.

**Stone**; point in Harford County, projecting into Chesapeake Bay.

**Stone**; run, a small branch of Octararo Creek in Cecil County.

**Stone**; wharf on St. Clement Bay in St. Mary County.

**Stone House**; cove, a small inlet of Curtis Bay in Anne Arundel County.

**Stony**; run, a small tributary of Patapsco River in Anne Arundel County.

**Stony**; run, a small branch of Northeast River in Cecil County.

**Stony**; run, a small branch of North Branch of Potomac River in Garrett County.

**Stony**; creek, a tributary of Patapsco River in Anne Arundel County.

**Stony**; creek, a tributary of Monocacy River in Frederick County.

**Stony**; point in Anne Arundel County, projecting into Patapsco River.

**Stony**; point in Cecil County, projecting into Elk River.

**Stony Run**; station in Anne Arundel County on the Philadelphia, Baltimore and Washington Railroad.

**Stratford**; small mountain ridge in Allegany County lying between Sawpit Run and Town Creek.



- Strawberry**; creek, a small tributary of Middle River in Baltimore County.
- Street**; post village in Harford County.
- Striking**; marshy bit of land in Worcester County in Chincoteague Bay.
- Stringtown**; village in Baltimore County.
- Stump**; small island in Susquehanna River in Harford County.
- Stump**; point in Cecil County, projecting into Chesapeake Bay.
- Sturges**; creek, a small branch of Nassawango Creek in Worcester County.
- Sudbrook Park**; post village in Baltimore County.
- Sudlersville**; post village in Queen Anne County on the Philadelphia, Baltimore and Washington Railroad.
- Sudley**; post village in Anne Arundel County.
- Sue**; creek, a small tributary of Middle River in Baltimore County.
- Sue**; point in Baltimore County, projecting into Middle River.
- Sugar**; point in Worcester County, projecting into Choptank River.
- Sugar Hill**; village in Harford County.
- Sugarland**; post village in Montgomery County.
- Sugar Loaf**; mountain, a hill in Montgomery County. Elevation, 1,281 feet.
- Suitland**; village in Prince George County.
- Sumiac**; pond in Wicomico County drained by Beaverdam Creek, a tributary of Wicomico River.
- Summerfield**; village in Baltimore County on the Maryland and Pennsylvania Railroad.
- Summerville**; village in Calvert County.
- Sunderland**; post village in Calvert County.
- Sunnybrook**; post village in Baltimore County.
- Sunnyside**; post village in Garrett County.
- Sunnyside**; village in Prince George County on Baltimore and Ohio Railroad.
- Susquehanna**; neck, a strip of land lying between Slaughter and Woolford creeks in Dorchester County.
- Swallow**; falls in Youghiogheny River in Garrett County.
- Swamp**; run, a small tributary of Little Swamp River in Garrett County.
- Swan**; creek, a small tributary of Patapsco River in Anne Arundel County.
- Swan**; creek, a small tributary to Chesapeake Bay in Harford County.
- Swan**; creek, a tributary of Sassafras River in Kent County.
- Swan**; small island in Chesapeake Bay in Dorchester County.
- Swan**; small marshy island in Chesapeake Bay in Somerset County.
- Swan**; gut, a small branch of Greys Creek in Worcester County.
- Swan**; point in Charles County, projecting into Potomac River.
- Swan**; point in Kent County, projecting into Chesapeake Bay.
- Swan Creek**; village in Harford County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads.
- Swanson**; creek, a small tributary of Patuxent River on boundary between Prince George and Charles counties.
- Swanton**; post village in Garrett County on the Baltimore and Ohio Railroad.
- Sweetair**; post village in Baltimore County.
- Sykesville**; post village in Carroll County on the Baltimore and Ohio Railroad.
- Sylmar**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Table**; rock, a summit in Backbone Mountain in Garrett County.
- Takoma**; town in Montgomery County on the Baltimore and Ohio Railroad. Population, 756.
- Talbert**; village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Talbot**; branch, a small tributary of Linganore Creek in Frederick County. •

**Talbot**; county, bounded southerly and southeasterly by the Choptank River and Tuckahoe Creek, northerly by Queen Anne County, and westerly by Chesapeake Bay. The surface is generally low and level and well drained by numerous streams flowing into the bay and bordering rivers. The area is 286 square miles, almost two-thirds of which, or 119,266 acres, were under cultivation in 1900. The population for the same year was 20,342. The county seat is Easton with a population of 3,074. St. Michaels and Oxford are also in this county and have a population of 1,042 and 1,243, respectively. The average magnetic declination in the county in 1900 was 5° 25' west. The annual rainfall commonly ranges between 45 and 50 inches and the mean annual temperature between 50° and 55°.

**Tally**; point in Anne Arundel County, projecting into Chesapeake Bay.

**Taneytown**; town in Carroll County. Population 665.

**Tangier**; sound, a part of Chesapeake Bay inclosed between series of low, marshy islands and the mainland of the peninsula in Somerset County.

**Tanhouse**; creek, a small tributary to Chincoteague Bay in Worcester County.

**Tanner**; creek, a small tributary to Chesapeake Bay in St. Mary County.

**Tannery**; post village in Carroll County.

**Tanyard**; post village in Caroline County.

**Tar**; bay, a small inlet of Chesapeake Bay in Dorchester County.

**Tar Coal**; cove, a small inlet of Magothy River, in Anne Arundel County.

**Tarkiln**; run, a small tributary of Castleman River in Garrett County.

**Tars**; creek, a small tributary of Tred Avon River in Talbot County.

**Tasker Corners**; village in Garrett County.

**Tate**; landing on Deep Creek in Anne Arundel County.

**Tavern**; creek, a small tributary to Chesapeake Bay.

**Taylor**; island, a large strip of elevated dry land in sea marshes of Dorchester County.

**Taylor**; landing on Chincoteague Bay in Worcester County.

**Taylor**; point in Dorchester County, projecting into Honga River.

**Taylor**; post village in Harford County.

**Taylor Island**; post village in Dorchester County.

**Taylorville**; village in Carroll County.

**Taylorville**; village in Worcester County.

**T. B.**; post village in Prince George County.

**Teague**; creek, a small tributary of Manokin River in Somerset County.

**Tedious**; creek, a small tributary to Fishing Bay in Dorchester County.

**Templeville**; post village in Queen Anne County.

**Ten Mile**; creek, a small tributary of Little Seneca Creek in Montgomery County.

**Terrapin Sand**; cove, a small inlet of Chesapeake Bay in Somerset County.

**Terrapin Sand**; point in Somerset County, projecting into Chesapeake Bay.

**Texas**; post village in Baltimore County on the Northern Central Railway.

**Thackery**; point in Cecil County, projecting into Elk River.

**Thayerville**; post village in Garrett County.

**Theodore**; village in Cecil County.

**The Three Sisters**; three small marshy islands in Chesapeake Bay in Anne Arundel County.

**Third Mine**; branch, a small tributary of Gunpowder Falls in Baltimore County.

**Thomas**; branch, a small tributary of Patuxent River in Anne Arundel County.

**Thomas**; point in Anne Arundel County, projecting into Chesapeake Bay.

**Thomas**; post village in Dorchester County.

**Thomas**; run, a small branch of Cabin John Creek in Montgomery County.

**Thomas**; run, a small tributary of Deer Creek in Harford County.

**Thomas Run**; post village in Harford County.

**Thompson**; creek, a small branch of Cox Creek in Queen Anne County.

**Thompson**; village in Dorchester County on the Philadelphia, Baltimore and Washington Railroad.

**Thornton**; small branch of Little Gunpowder Falls in Harford County.

**Thorofare**; small passage between Gab Island and another small island in Somerset County.

**Three Fork**; run, a small tributary of North Branch of Potomac River in Garrett County.

**Thrift**; post village in Prince George County.

**Thurmont**; town in Frederick County on the Western Maryland Railroad. Population, 868.

**Tilghman**; cove, a small inlet of Chester River in Queen Anne County.

**Tilghman**; creek, a small tributary to Eastern Bay in Talbot County.

**Tilghman**; creek, a small tributary of Chester River in Queen Anne County.

**Tilghman**; small island in Talbot County separated from the mainland by Knapp Narrows.

**Tilghman**; point in Talbot County, projecting into Eastern Bay.

**Tilghman**; pond in Worcester County drained by a small branch of Pocomoke River.

**Tilghman**; post village in Talbot County on the Philadelphia, Baltimore and Washington Railroad.

**Tingles**; small marshy island in Chincoteague Bay in Worcester County.

**Tinkers**; creek, a small tributary of Piscataway Creek in Prince George County.

**Timber**; neck, a strip of land in Cecil County lying between Chesapeake Bay and Elk River.

**Timber**; ridge, a small mountain ridge in Washington County extending into Pennsylvania.

**Timmonstown**; branch, a small tributary of Pocomoke River in Worcester County.

**Timonium**; post village in Baltimore County on the Northern Central Railway.

**Timothy**; branch, a small tributary of Mattawoman Creek in Prince George County.

**Tippett**; post village in Prince George County.

**Tizzard**; small, almost entirely marshy island in Chincoteague Bay in Worcester County.

**Tobacco**; run, a small tributary of Deer Creek in Harford County.

**Tobin**; village in Baltimore County.

**Todd**; point in Dorchester County, projecting into Choptank River.

**Toddville**; post village in Dorchester County.

**Tolchester Beach**; post village in Kent County.

**Toliver**; run, a small tributary of Youghiogheny River in Garrett County.

**Tolson**; creek, a small tributary to Chesapeake Bay in Queen Anne County.

**Tom**; cove, a small inlet of Chesapeake Bay in Dorchester County.

**Tom**; point in Cecil County, projecting into Elk River.

**Tom**; ridge, a spur of Meadow Mountain extending into a bend of Middle Fork Creek in Garrett County.

**Tomakokin**; creek, a small tributary to St. Clement Bay in St. Mary County.

**Tompkinsville**; post village in Charles County.

**Toms Lick**; run, a small tributary of Little Youghiogheny River in Garrett County.

**Tonoloway**; creek, a tributary of Potomac River in Washington County.

**Tonoloway**; ridge, a continuation of Tonoloway Mountain Ridge of West Virginia into Washington County.

**Tonytank**; creek, a tributary of Wicomico River in Wicomico County.

**Toulson**; post village in Caroline County.

**Town**; creek, a small tributary of Tred Avon River in Talbot County.

**Town**; creek, a small tributary of Patuxent River in St. Mary County.

**Town**; creek, a tributary of Potomac River in Allegany County.

- Town;** hill, a long mountain ridge in Allegany County.
- Town;** point in Cecil County, projecting into Elk River.
- Town;** point in Charles County, projecting into Patuxent River.
- Town;** point in Dorchester County, projecting into Choptank River.
- Town;** point in St. Mary County, projecting into Patuxent River.
- Towncreek;** post village in Allegany County.
- Town Point;** neck, a strip of land lying between Bohemia and Elk rivers in Cecil County.
- Townpoint;** post village in Cecil County.
- Townshend;** post village in Prince George County.
- Towers;** branch, a tributary of Little Patuxent River in Anne Arundel County.
- Towson;** county seat of Baltimore County on the Maryland and Pennsylvania Railroad.
- Tracys Landing;** post village in Anne Arundel County.
- Transquaking;** river in Dorchester County flowing into Fishing Bay.
- Trap;** run, a small tributary of Youghiogheny River in Garrett County.
- Trap;** village in St. Mary County.
- Trappe;** creek, a small tributary to Newport Bay in Worcester County.
- Trappe;** landing on Trappe River in Talbot County.
- Trappe;** river in Talbot County flowing into Choptank River.
- Trappe;** village in Talbot County on the Philadelphia, Baltimore and Washington Railroad. Population, 279.
- Trappe;** village in Wicomico County.
- Travers;** wharf on Le Compte Bay in Dorchester County.
- Travilah;** post village in Montgomery County.
- Tred Avon;** river, a tributary to Choptank River in Talbot County.
- Trego;** post village in Washington County.
- Trent Hall;** creek, a small tributary of Patuxent River in St. Mary County.
- Triadelphia;** post village in Howard County.
- Trills Corner;** village in Somerset County.
- Trippe;** bay, a small inlet of Choptank River in Dorchester County.
- Trippe;** creek, a tributary of Tred Avon River in Talbot County.
- Trout;** run, a small tributary of Little Youghiogheny River in Garrett County.
- Troy;** small marshy island in Chesapeake Bay in Somerset County.
- Troy;** village in Charles County.
- Troyer;** village in Baltimore County.
- Trueman;** point in Prince George County, projecting into Patuxent River.
- Truesdell;** heights, a summit in Backbone Mountain in Garrett County. Elevation, 2,809 feet.
- Truitt;** village in Wicomico County.
- Trump;** village in Baltimore County.
- Tub Mill;** creek, a small tributary of Choptank River in Caroline County.
- Tuckahoe;** creek, a tributary of Choptank River on boundary between Queen Anne, Caroline, and Talbot counties.
- Tuckahoe;** post village in Caroline County on the Queen Anne's Railroad.
- Tull;** point in Somerset County, projecting into Wicomico River.
- Tulls Corner;** post village in Somerset County.
- Tunis Mills;** post village in Talbot County.
- Turkey;** small branch of Western Branch in Prince George County.
- Turkey;** point in Anne Arundel County, projecting into South River.
- Turkey;** point in Baltimore County, projecting into Middle Creek.
- Turkey;** point in Cecil County, projecting into Chesapeake Bay.
- Turkey;** point in Queen Anne County, projecting into Eastern Bay.
- Turkey;** run, a small branch of Stony Creek in Frederick County.

**Turkey Lodge**; hill, a ridge lying between Elk Lick and Poplar Lick runs in Garrett County.

**Turkey Neck**; point in Talbot County, projecting into Harris Creek.

**Turner**; creek, a tributary of Sassafras River in Kent County.

**Turner**; gap in Blue Ridge Mountains in Frederick County.

**Turner**; village in St. Mary County on the Baltimore, Chesapeake and Atlantic Railway.

**Turner Creek**; wharf in Kent County on Turner Creek.

**Turpin**; cove, a small inlet of Chincoteague Bay in Worcester County.

**Turtle Egg**; small marshy island in Holland Straits in Somerset County.

**Turville**; creek, a small stream in Worcester County flowing into Isle of Wight Bay.

**Tuscarora**; post village in Frederick County on the Baltimore and Ohio Railroad.

**Tuxedo**; post village in Prince George County.

**Twiggtown**; post village in Allegany County.

**Twilley**; village in Wicomico County.

**Twitch**; cove, a small inlet of Tangier Sound in Somerset County.

**Two Johns**; post village in Caroline County.

**Twomile**; run, a small branch of Big Piney Run in Garrett County.

**Tyaskin**; post village in Wicomico County.

**Uncle**; village in St. Mary County.

**Unicorn**; branch, a small tributary of Chester River in Queen Anne County.

**Union**; run, a small tributary of Bush River in Harford County.

**Union Bridge**; town in Carroll County on the Western Maryland Railroad. Population, 663.

**Unionville**; village in Frederick County.

**Unionville**; village in Talbot County.

**Unionville**; village in Worcester County.

**Unity**; post village in Montgomery County.

**Upperco**; post village in Baltimore County.

**Upper Crossroads**; post village in Harford County.

**Upper Fairmont**; post village in Somerset County.

**Upper Ferry**; village in Wicomico County.

**Upper Hunting**; creek, a small tributary of Choptank River in Dorchester County.

**Upper Marlboro**; county seat of Prince George County on the Chesapeake Beach Railway. Population, 447.

**Urbana**; village in Frederick County.

**Vale**; post village in Harford County.

**Vale**; run, a small tributary of Georges Creek in Allegany County.

**Valentine**; creek, a small tributary of Severn River in Anne Arundel County.

**Vale Summit**; post village and station in Allegany County on the George's Creek and Cumberland Railroad.

**Valley Lee**; post village in St. Mary County.

**Valliant**; post village in Talbot County.

**Van Bibber**; post village in Harford County on the Baltimore and Ohio Railroad.

**Veazey**; neck, a strip of land lying between Bohemia River and Cabin John Creek in Cecil County.

**Velvet Rock**; branch, a small tributary of Susquehanna River in Harford County.

**Verona**; village in Baltimore County.

**Victor**; village in Somerset County.

**Vienna**; post village in Dorchester County on the Baltimore, Chesapeake and Atlantic Railway.

**Wades**; point in Talbot County, projecting into Eastern Bay.

**Wagram**; creek, a small tributary of Pocomoke River in Worcester County.

- Wakefield**; post village in Carroll County on the Western Maryland Railroad.
- Walbrook**; suburb of Baltimore City within its chartered limits on the Western Maryland Railroad.
- Waldorf**; post village in Charles County on the Philadelphia, Baltimore and Washington Railroad.
- Walker**; village in Baltimore County on the Northern Central Railway.
- Walkers Switch**; post village in Baltimore County.
- Walkersville**; town in Frederick County on the Northern Central Railway. Population, 359.
- Wallace**; creek, a small tributary of Honga River in Dorchester County.
- Wallman**; post village in Garrett County.
- Wallville**; post village in Calvert County.
- Walnut**; hill, a summit in Pea Ridge in Garrett County. Elevation, 2,770 feet.
- Walnut**; point in Anne Arundel County, projecting into Curtis Creek.
- Walnut**; small mountain ridge in Allegany County lying between Collier and Warrior mountains.
- Walnut**; village in Wicomico County.
- Walston**; village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.
- Walters**; post village in Baltimore County.
- Wango**; village in Wicomico County.
- Wann**; cove, a small inlet of East Fork of Langford Bay in Kent County.
- Ward**; village in Somerset County on the New York, Philadelphia and Norfolk Railroad.
- Ward Chapel**; village in Baltimore County.
- Warehouse**; creek, a small tributary of Cox Creek in Queen Anne County.
- Waring**; village in Montgomery County on the Baltimore and Ohio Railroad.
- Warntel**; run, a small tributary of Savage Run in Garrett County.
- Warren**; post village in Baltimore County.
- Warrior**; small mountain ridge in Allegany County.
- Warrior**; run, a small tributary of North Branch of Potomac River in Allegany County.
- Warwick**; point, a summit on east bank of Savage River in Garrett County.
- Warwick**; post village in Cecil County.
- Washington**; county, situated in the western mountainous portion of the State, bounded on the north by Pennsylvania, east by Blue Ridge Mountains, south and southwest by Potomac River, and west by Allegany County. The surface is an alternation of ridges and valleys, the latter being drained by Antietam, Conococheague, and Israel creeks. The area is 458 square miles, of which more than two-thirds, or 197,948 acres, was under cultivation in 1900. The population for the same year was 45,133. The county seat is Hagerstown. Other towns are Sharpsburg and Williamsport, having populations of 1,030 and 1,472, respectively. The average magnetic declination in the county in 1900 was 4° 30'. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 45° and 50°.
- Washington**; creek, a small tributary of Patuxent River in St. Mary County.
- Washington Grove**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- Washington Junction**; station in Frederick County on the Baltimore and Ohio Railroad.
- Waterbury**; post village in Anne Arundel County on the Annapolis, Washington and Baltimore Railroad.
- Waterhole**; cove, a small inlet of Harris Bay in Talbot County.
- Waterloo**; village in Howard County.

- Watersville**; post village in Carroll County on the Baltimore and Ohio Railroad.
- Waterworks**; creek, a small tributary to Chincoteague Bay in Worcester County.
- Watkins**; point in Somerset County, projecting into Pocomoke River.
- Watkins**; post village in Montgomery County.
- Watts**; branch, a small tributary of Potomac River in Montgomery County.
- Watts**; creek, a small tributary of Choptank River in Caroline County.
- Waverly**; suburb of Baltimore City within its chartered limits.
- Wayside**; post village in Charles County.
- Wear**; point in Somerset County, projecting into Big Annemessex River.
- Webster**; post village in Harford County.
- Weem**; creek, a small tributary of Severn River in Anne Arundel County.
- Weir**; point in Baltimore County, projecting into Bush River.
- Weisburg**; village in Baltimore County.
- Welbourne**; post village in Worcester County.
- Welcome**; post village in Charles County.
- Wellhams**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Wellington**; post village in Somerset County.
- Wellridge**; creek, a small tributary to Tangier Sound in Somerset County.
- Welsh**; point in Cecil County, projecting into Elk River.
- Welshman**; creek, a small tributary of Patapsco River.
- Wenona**; post village in Somerset County.
- Wesley**; post village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.
- West**; branch, a small tributary of Jones Falls Creek in Baltimore County.
- West**; branch, a small tributary of Little Elk River in Cecil County.
- West**; branch, a small tributary of Little Northeast Branch in Cecil County.
- West**; branch, a small stream heading in Cecil County and flowing through Delaware into Persimmon Run.
- West**; small branch of Winters Creek in Harford County.
- West**; creek, a small tributary of Little Annemessex River in Somerset County.
- West**; river, a tributary to Chesapeake Bay in Anne Arundel County.
- West**; village in Somerset County.
- West Beavercreek**; post village in Washington County.
- Western**; branch, a small tributary of Patuxent River in Prince George County.
- Western**; group of small marshy islands at mouth of Goose Creek in Somerset County.
- Western**; run, a small tributary of Beaver Dam Creek in Baltimore County.
- Westernport**; town in Allegany County on the West Virginia Central and Pittsburgh Railroad. Population, 1,008.
- Western Run**; post village in Baltimore County.
- West Falls**; village in Carroll County.
- West Friendship**; post village in Howard County.
- West Liberty**; village in Baltimore County.
- Westminster**; county seat of Carroll County on the Western Maryland Railroad. Population, 3,199.
- Westover**; post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.
- Westphalia**; post village in Prince George County.
- West River**; post village in Anne Arundel County.
- Westwood**; post village in Prince George County.
- Wetipquin**; post village in Wicomico County.
- Weverton**; post village in Washington County on the Baltimore and Ohio Railroad.

**Whaleysville**; post village in Worcester County on the Baltimore, Chesapeake and Atlantic Railway.

**Whayland**; post village in Wicomico County.

**Wheaton**; post village in Montgomery County.

**Wheel**; post village in Harford County.

**Whiteburg**; post village in Worcester County.

**Whiteford**; post village in Harford County.

**Whitehall**; post village in Baltimore County on the Northern Central Railway.

**Whitehaven**; post village in Wicomico County.

**White Knob**; mountain in Garrett County.

**Whiteleysburg**; post village in Caroline County.

**Whitemarsh**; creek, a small tributary of Rhode River in Anne Arundel County.

**Whitemarsh**; post village in Baltimore County.

**Whitemarsh**; run, a small tributary of Horning Run in Baltimore County.

**White Meadow**; run, a small branch of Cherry Run in Garrett County.

**White Neck**; creek, a small tributary to St. Catharine Sound in St. Mary County.

**Whiteoak**; point in Baltimore County, projecting into Bush River.

**Whiteoak**; run, a small tributary to North Branch of Patapsco River in Carroll County.

**Whiteoak**; village in Montgomery County on the Philadelphia, Baltimore and Washington Railroad.

**Whiteoak Spring**; run, a small branch of Muddy Creek in Garrett County.

**Whiteplains**; post village in Charles County.

**White Rock**; small island in Patapsco River in Anne Arundel County.

**White Rock**; run, a small tributary of Youghiogheny River in Garrett County.

**Whites Ferry**; post village in Montgomery County.

**White Sulphur**; small branch of Fifteenmile Creek in Allegany County.

**Whitneys**; landing on Severn River in Anne Arundel County.

**Whiton**; post village in Wicomico County.

**Whittington**; point in Worcester County, projecting into Chincoteague Bay.

**Wicomico**; county, organized in 1867 from portions of Somerset and Worcester counties, with the following boundaries: north, the south boundary of the State of Delaware; east, Pocomoke River; south, Somerset and Worcester counties, and west, Nanticoke River. The surface is level. The area is 365 square miles, of which more than one-half, or 122,453 acres, was under cultivation in 1900. The county seat is Salisbury, with a population of 4,277 in 1900. The average magnetic declination in the county in 1900 was 5° 15'. The rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 55° and 60°.

**Wicomico**; post village in Charles County.

**Wicomico**; river, an estuary on the north side of Potomac River in Charles and St. Mary counties, forming the boundary line between the two counties. Two streams, known as Zekiah and Gilbert swamps, flow into it at its head.

**Wicomico**; river on the east shore of Maryland heading on the south boundary of Delaware and flowing southwest into Tangier Sound, an arm of Chesapeake Bay. Much of its course is bordered by marshes. Near its mouth it forms an estuary.

**Widgeon**; village in Somerset County.

**Wild Cat**; small branch of Great Seneca Creek in Montgomery County.

**Wild Cat**; creek, a small branch of Little Bennetts Creek in Montgomery County.

**Wild Cat**; point in Cecil County, projecting into Susquehanna River.

**Willards**; post village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.

**Williams**; point in Somerset County, projecting into Pocomoke River.



- Williamsburg**; post village in Dorchester County.
- Williamsport**; town in Washington County on the Cumberland Valley and the Western Maryland railroads. Population, 1,472.
- Williston**; post village in Caroline County.
- Willoughby**; post village in Queen Anne County on the Queen Anne's Railroad.
- Willows**; post village in Calvert County.
- Wills**; creek, a small stream rising in Pennsylvania and flowing into North Branch of Potomac River in Allegany County.
- Wills**; mountain, a continuation of Knobby Mountain of West Virginia. Elevation, 1,877 feet.
- Wilna**; post village in Harford County.
- Wilson**; point in Harford County, projecting into Bush River.
- Wilson**; point in Baltimore County, projecting into Middle River.
- Wilson**; point in Kent County, projecting into Chesapeake Bay.
- Wilson**; wharf on Magothy River in Anne Arundel County.
- Wilson Point**; wharf on Sassafras River in Kent County.
- Wimbledon**; post village in Harford County.
- Wimms**; branch, a small tributary of Horsepen Branch in Prince George County.
- Winans**; station in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.
- Winans**; cove, a small inlet of Patapsco River in Baltimore County.
- Winchester**; creek, a small tributary of Chester River in Queen Anne County.
- Winchester**; village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Winding**; mountain ridge in Garrett County. Elevation, 2,866 feet.
- Windlass**; run, a small branch of Bird River in Baltimore County.
- Windmill**; creek, a small branch of St. Martin River in Worcester County.
- Windmill**; point in Charles County, projecting into Potomac River.
- Windmill**; point in Dorchester County, projecting into Honga River.
- Windmill**; point in St. Mary County, projecting into St. Mary River.
- Windsor**; creek, a small tributary of Nanticoke River in Wicomico County.
- Windyhill**; post village in Talbot County.
- Winebrenner**; run, a small stream rising in Garrett County and flowing into Georges Creek in Allegany County.
- Winfield**; village in Carroll County.
- Wingate**; point in Dorchester County, projecting into Honga River.
- Wingate**; post village in Dorchester County.
- Winter**; run, a small tributary of Patapsco River in Carroll County.
- Winters**; run, a small branch of Otter Point Creek in Harford County.
- Wire**; pond, a small inlet of Isle of Wight Bay in Worcester County.
- Witchcoate**; point in Baltimore County, projecting into Back River.
- Wittman**; post village in Talbot County.
- Wolf**; gap in Big Savage Mountain in Garrett County.
- Wolf**; rock, a summit in Dans Mountain in Allegany County. Elevation, 2,796 feet.
- Wolfden**; run, a small tributary of North Branch of Potomac River in Garrett County.
- Wolfe Mill**; village in Allegany County.
- Wolftrap**; creek, a small tributary of Manokin River in Somerset County.
- Wolsey**; creek, a small tributary of Chester River in Queen Anne County.
- Wood**; small island in Susquehanna River in Harford County.
- Woodberry**; suburb of Baltimore City within its chartered limits.
- Woodbine**; post village and station in Carroll County on the Baltimore and Ohio Railroad.

**Woodbrook**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.

**Woodensburg**; post village in Baltimore County on the Western Maryland Railroad.

**Woodfield**; post village in Montgomery County.

**Woodland**; creek, a small tributary of Miles River in Talbot County.

**Woodland**; post village in Talbot County.

**Woodlawn**; village in Cecil County.

**Woodmore**; post village in Prince George County.

**Woods**; point in Worcester County, projecting into St. Martin River.

**Woodsboro**; post village in Frederick County on the Northern Central Railway.

**Woodside**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Woodstock**; post village in Howard County on the Baltimore and Ohio Railroad.

**Woodville**; village in Frederick County on the Washington, Potomac and Chesapeake Railroad.

**Woodwardville**; post village in Anne Arundel County.

**Woodyard**; village in Prince George County.

**Woolford**; creek, a small tributary of Little Choptank River in Dorchester County.

**Woolford**; neck, a strip of land lying between Woolford Creek and Madison Bay in Dorchester County.

**Woolford**; post village in Dorchester County.

**Worcester**; county, organized in 1742, occupies the extreme southeast corner of the State, and comprises the whole of the Maryland ocean front. It is bounded on the north by Wicomico County and the State of Delaware, east by the ocean, and south by the ocean and Virginia, and west by Pocomoke River. The surface of the county is low and level, in some places rising only 5 feet above the sea. The Atlantic coast is bordered by sand bars separated from the mainland by lagoons known as Assawoman and Sinepuxent bays, having marshy shores. The area is 487 square miles, of which more than a third, or 132,549 acres, was under cultivation in 1900. The population for the same year was 20,865. The county seat is Snow Hill, with a population of 1,576. Other towns are Pocomoke and Berlin, with populations of 2,248 and 1,246, respectively. The average magnetic declination in the county in 1900 was 5° 05'. The rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature, between 45° and 50°.

**Worlds End**; creek, a small tributary of Charles Creek in Dorchester County.

**Worton**; creek, a small tributary to Chesapeake Bay in Kent County.

**Worton**; point in Kent County, projecting into Chesapeake Bay.

**Worton**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Wrights**; branch, a small tributary of Nanticoke River in Dorchester County.

**Wrights**; post village in Dorchester County.

**Wrights**; run, a small tributary of Georges Creek in Allegany County.

**Wroten**; small, almost entirely marshy island in Honga River in Dorchester County.

**Wroths**; point in Cecil County, projecting into Elk River.

**Wye**; landing on Wye River in Talbot County.

**Wye**; landing on Wye River in Queen Anne County.

**Wye Mills**; village in Talbot County.

**Wye**; narrows, a passage connecting Back and Front Wye rivers in Queen Anne County.

**Wye**; river, a tributary to Eastern Bay in Queen Anne County.

**Wynne**; post village in St. Mary County.

**Yellow**; branch, a small tributary of Little Gunpowder Falls in Harford County.

**Yellow Springs**; village in Frederick County.

**Yeoho**; village in Baltimore County.

## II

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185. Results of spirit leveling, fiscal year 1900-01, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1901. 219 pp.
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230. Gazetteer of Delaware, by Henry Gannett. 1904. 15 pp.
231. Gazetteer of Maryland, by Henry Gannett. 1904. 84 pp.

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### U. S. Geological survey.

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no. 231. Gannett, Henry. A gazetteer of Maryland.  
1904.

### U. S. Dept. of the Interior.

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A

GAZETTEER OF VIRGINIA

BY

HENRY GANNETT



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## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., March 9, 1904.*

SIR: I have the honor to transmit herewith, for publication as a  
bulletin, a gazetteer of Virginia.

Very respectfully,

HENRY GANNETT,  
*Geographer.*

Hon. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*



# A GAZETTEER OF VIRGINIA.

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By HENRY GANNETT.

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## GENERAL DESCRIPTION OF THE STATE.

Virginia is one of the easternmost States of the Union. It lies on the Atlantic seaboard between latitudes  $36^{\circ} 30'$  and  $39^{\circ} 30'$  and longitudes  $75^{\circ}$  and  $84^{\circ}$ . Its limits are very irregular, except on the south, and even there the boundary, though nominally a parallel of latitude, is actually by no means such a line.

From the Atlantic Ocean, just above the parallel of  $38^{\circ}$ , the boundary crosses the peninsula known as the Eastern Shore, which separates Chesapeake Bay from the Atlantic, in a direction south of west. Then, after a sinuous course among islands fringing the west coast of this peninsula, it crosses Chesapeake Bay to a point on the south side of the mouth of Potomac River. It follows the south bank of the Potomac at low-water line up to Harpers Ferry, where the river cuts through the Blue Ridge. Here the boundary leaves the river and makes a generally southwest course, with several jogs to the northwest, to a point near the head of the Tug Fork of the Big Sandy. From this point it follows a fairly constant southwest course, most of the way along the summit of Pine Mountain, to Cumberland Gap. Here it turns sharply to the east along a parallel which was originally intended to be  $36^{\circ} 30'$  north latitude. The line in reality, however, is from 2 to 6 minutes north of that parallel. This general eastern course it follows to the Atlantic coast.

Virginia was one of the original thirteen States. It adopted the Constitution on June 25, 1788. As admitted it comprised not only its present area but West Virginia and Kentucky. Kentucky was set off and admitted as an independent State June 1, 1792. During the civil war the counties forming what is now the State of West Virginia were admitted to the Union as an independent State, the admission taking effect June 19, 1863.

In 1791 the State ceded to the General Government a tract of country lying south of the Potomac and forming what is now the county of Alexandria, Va., as a portion of the District of Columbia, but in 1846

Congress re-ceded this area to the State. The gross area of Virginia as at present constituted is 42,450 square miles, of which 40,125 is land area, the remainder consisting of land-locked bays and harbors, Drummond Lake, and rivers.

The topography is varied. Along the coast and extending for a varying distance inland the surface is low, being in few places over 200 feet above tide, and along the immediate coast much of the land is marshy. The rivers in this part of the State have the form of estuaries, are broad, with little current, and all streams of any magnitude are tidal. This region, commonly known as the Coastal Plain, is covered with soft Cretaceous and Tertiary rocks. Within it, in the southeast corner of the State, is the great Dismal Swamp, reaching an elevation nowhere more than 22 feet above mean sea level, and it is an almost impassable jungle of canebrake. In its center and upon its highest ground is Drummond Lake, an area of water 5 square miles in extent, without affluents, but drained by two or three artificial ditches.

The Coastal Plain is terminated on the west by what is called the "fall line." This is in the narrow zone in which the granitic rocks lying to the west pass below tide level. Over this fall line the streams from the Potomac to the south boundary of the State pass in a succession of rapids or falls due to the ledges of hard rock in the stream beds. This line is crossed by the Potomac at Georgetown, by the Rappahannock at Fredericksburg, and by the James at Richmond. The mills at Manchester, opposite Richmond on the James, are run by water power from the rapids at this point.

Above the fall line is what is known as the Piedmont Plateau, a region in the main composed of metamorphic rocks, largely granite and allied rocks. This region is higher than the Coastal Plain, and the relief increases westward. The gorges of the streams become deeper and occasional short ridges appear, outliers of the Blue Ridge.

The Blue Ridge is the principal eastern range of the Appalachian Mountain system. It is crossed by the Potomac at Harpers Ferry, and from that point it extends southwestward, crossing the south boundary of the State in longitude  $80^{\circ} 50'$ . At Harpers Ferry it has a height of about 1,200 feet, but it increases southwestward, reaching 3,374 feet in Mount Marshall, 4,031 feet in Stonyman, and 4,001 feet in the Peaks of Otter. Farther southwest it has a plateau-like character, with a steep descent to the southeast and a gentle slope to the northwest. It is cut through by several streams, as stated above—by the Potomac at Harpers Ferry, and by the James and the Roanoke.

West of the Blue Ridge lies the Appalachian Valley, whose northern part is drained toward the northeast by the Shenandoah, a branch of the Potomac, farther south by the headwaters of the James and the

Roanoke, by New River, one of the principal sources of the Kanawha, which flows northwestward to the Ohio, and by the various branches of the Holston, which is one of the chief sources of Tennessee River. This valley is composed of many smaller valleys, separated by narrow, sinuous ridges, trending in the general direction of the main valley. These ridges are cut through at frequent intervals by streams, which thus pass from one secondary valley to another.

The highest point in the State is Mount Rogers, on the Blue Ridge, near the southern boundary.

The average elevation of the State above sea level is 950 feet. The areas between different zones of altitude are as follows:

*Areas in Virginia at different altitudes.*

	Square miles.
0 to 100 feet.....	9,700
100 to 500 feet.....	10,500
500 to 1,000 feet.....	5,950
1,000 to 1,500 feet.....	4,700
1,500 to 2,000 feet.....	4,200
2,000 to 3,000 feet.....	6,800
3,000 to 4,000 feet.....	600

The principal rivers of the State, after the Potomac, which can scarcely be said to belong to it, although it serves as an important means of communication and drains a considerable area, are the Rappahannock, the James, which is navigable nearly to Richmond, and the Roanoke, which is partly within the State, but is not navigable within its limits. The coast is everywhere low, that facing the Atlantic is sandy, and much of it is bordered by sand bars. The principal ports are Norfolk and Newport News, both with good harbors opening upon the foot of Chesapeake Bay.

Virginia lies within the temperate zone, in the region of the prevailing westerly winds. The mean annual temperature ranges from 50° in the northern and western or mountainous parts to 60° in the Coastal Plain and the Piedmont region. The annual rainfall, which is fairly well distributed through the year, ranges from 40 to 60 inches, most of the Coastal Plain and the Piedmont region having a rainfall between 45 and 50 inches, while in the mountains the precipitation is considerably greater.

Virginia was originally forested over nearly all of its area, but through clearing the land for cultivation and the cutting of timber for various economic purposes the amount of merchantable timber remaining is comparatively small. No estimate of it has, however, been made.

Virginia was one of the first States of the Union to be settled, and at the time of the first census, taken in 1790, it had a population of nearly three-fourths of a million, being at that time the most populous

of all the States. The following table shows the population at each census and the rate of increase:

*Population of Virginia at each census since 1790.*

Year.	Population.	Increase.
		<i>Per cent.</i>
1790.....	747,610	.....
1800.....	880,200	17.7
1810.....	974,600	10.7
1820.....	1,065,366	9.3
1830.....	1,211,405	13.7
1840.....	1,239,797	2.3
1850.....	1,421,661	14.7
1860.....	1,596,318	12.3
1870.....	1,225,163	<sup>a</sup> 23.3
1880.....	1,512,565	23.5
1890.....	1,655,980	9.5
1900.....	1,854,184	12

<sup>a</sup> Decrease, due to the loss of West Virginia.

The population is given for the State as it existed at the time of the census—that is, up to 1860 it included West Virginia, while since that time it includes only what is now within its limits. The rate of increase, however, has been computed upon the population which existed within the present limits of the State. In 1900, with a population of 1,854,184, it was the seventeenth State in number of inhabitants. Of the total population, only 14.6 per cent were found in cities having a population of 8,000 or more, and the remaining 85.4 per cent, or about six-sevenths of all the inhabitants, are classed under this definition as rural. This proportion of rural population is much greater than that of the country at large.

There are ten cities in the State each having a population exceeding 8,000. They are as follows:

*Population of cities in Virginia having more than 8,000 inhabitants.*

Richmond.....	85,050
Norfolk.....	46,624
Petersburg.....	21,810
Roanoke.....	21,495
Newport News.....	19,635
Lynchburg.....	18,891
Portsmouth.....	17,427
Danville.....	16,520
Alexandria.....	14,528
Manchester.....	9,715

*The above cities are independent of county government.*

The State is divided into 100 counties. These with their areas and populations will be found in the general alphabetical list following.

In 1900 the population was very nearly equally divided between the sexes, the males constituting 49.9 per cent and the females 50.1 per cent. As to color, the proportions are 64.3 per cent white and 35.6 per cent colored. The colored are practically all negroes, as the number of Chinese, Japanese, and Indians is trifling. The white race increased in the decade between 1890 and 1900 at the rate of 16.9 per cent, while the negroes increased at the rate of only 4 per cent, owing to a movement of the negro population away from the State, probably southward. The population is nearly all of native birth, there being 99 per cent born in the United States and 1 per cent born abroad.

Of the total number of persons 10 years of age or more 22.9 per cent were unable to read, the most of them being negroes. Of the whites 10 years of age and over, only 11.1 per cent were illiterate. Of persons of school age—that is, between 5 and 20 years, 42 per cent attended school.

The total number of persons engaged in gainful occupations was 48.6 per cent of the entire population 10 years of age and over; that is to say, of this class, nearly one-half were engaged in gainful occupations. Of this class of wage-earners 45.3 per cent were engaged in agriculture, 3.2 per cent in professional pursuits, 23.6 per cent in domestic and other personal service, 11.2 per cent in trade and transportation, and 16.7 per cent in manufactures and mining. It thus appears that agriculture is the principal occupation of the people of the State, the number engaged in it being nearly one-half of all the wage-earners, and nearly twice as great as the number engaged in any other pursuit.

Virginia is preeminently an agricultural State, although it has some manufactures of importance. In 1900 the number of farms was 167,886, of which 73.3 per cent, or nearly three-fourths, were occupied by white farmers, while the remainder, 26.7 per cent, were occupied by negroes. As to tenure, 69.3 per cent, or nearly seven-tenths, of the farms in the State were owned by their occupants, 9.9 per cent were rented for a cash rental, and 20.8 per cent were rented for a share of the products. A much larger proportion of the negro farmers were tenants than of the white farmers, and as a rule the negro tenants pay their rent by a share of the product.

The total area of farms was 19,907,883 acres. The average size of farms was 118.6 acres, being considerably less than the average of the United States. The total amount of improved land was 10,094,805 acres, or little more than one-half the total area of farms, and 39.3 per cent of the total area of the State; in other words, about two-fifths of the State was under cultivation.

The value of all farm property was \$323,515,997. This includes the



the value of the lands, buildings, live stock, implements, machinery, etc.—in short, the total farming capital. The average of this per farm was \$1,927. The total value of the products of the farms was \$86,548,545. This is between 26 and 27 per cent of the farming capital.

The following table shows the number of different classes of live stock upon farms in the State:

*Live stock in Virginia.*

Neat cattle .....	825,512
Horses .....	298,522
Mules .....	47,474
Sheep .....	692,929
Swine .....	946,443

The following table shows the amount of the principal agricultural products:

*Statistics of agricultural products in Virginia.*

Dairy products .....	dollars..	7,000,000
Corn .....	bushels..	1,910,000
Wheat .....	do....	927,266
Oats .....	do....	275,394
Hay .....	tons..	612,962
Tobacco .....	pounds..	122,884,900

In the product of tobacco this State is exceeded only by Kentucky and North Carolina, and the excess of the product of the latter State over Virginia is but trifling.

As a manufacturing State, Virginia does not take high rank, but with her rich deposits of excellent coking coal and of iron, it is probable that manufacturing will greatly increase in future years. General statistics of the manufacturing industry in 1900 are set forth in the following table:

*Statistics of manufacturing in Virginia.*

Manufacturing capital .....	\$103,670,988
Wage-earners .....	number.. 72,702
Wages .....	\$22,445,720
Materials .....	\$74,851,757
Products .....	\$132,172,910

The above gross product of manufactures was made up in part of the following items:

*Principal classes of manufactures in Virginia in 1900.*

Cars, etc. ....	\$6,277,279
Flour .....	12,687,267
Iron and steel .....	8,341,888
Lumber .....	12,137,177
Lumber planing mills .....	2,686,898
All textiles .....	3,282,583
Cotton goods .....	2,655,002

Tobacco .....	\$21, 278, 266
Fertilizers .....	3, 415, 850
Foundry and machine-shop products .....	4, 833, 137
Leather .....	4, 716, 920

The above are the leading manufacturing products of the State and include three-fifths of all the manufactures.

In 1902 the State included 3,832 miles of railway, or 9.55 miles for each 100 square miles, and 19.98 miles for each 10,000 inhabitants. The railways of the State are, in the main, included in the five following systems: Southern, Chesapeake and Ohio, Atlantic Coast Line, Norfolk and Western, and Baltimore and Ohio.

The principal mineral products are coal and iron ore, both of which are found chiefly in the southwestern mountainous portion of the State. The coal production in 1901 was 2,725,873 short tons, and the amount of coke produced was 907,130 short tons. In the States of Virginia and West Virginia there were produced in the same year 925,394 long tons of iron ore. The production of Virginia can not be given separately. There were smelted within the State of Virginia in that year 443,662 long tons of pig iron. Besides the above, 4,275 tons of manganese ore were mined.

## GAZETTEER.

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- Aaron**; post village in Carroll County.  
**Aaron**; creek, small right-hand branch of Dan River in Halifax County.  
**Abbie**; post village in Carroll County.  
**Abbott**; post village in Craig County.  
**Abbs**; valley in Tazewell County.  
**Abbyville**; post village in Mecklenburg County.  
**Abell**; post village in Charlotte County.  
**Abercorn**; post village in Amelia County.  
**Abert**; post village in Bedford County on the Chesapeake and Ohio Railway.  
**Abilene**; post village in Charlotte County.  
**Abingdon**; county seat of Washington County, on the Norfolk and Western and the Virginia-Carolina railroads. Altitude, 2,057 feet. Population, 1,306.  
**Abner Knob**; summit in Montgomery County. Elevation, 2,838 feet.  
**Abraham**; post village in Floyd County.  
**Abrams**; creek, a small left-hand tributary to North Fork of Holston River, which rises in Washington County.  
**Abrams**; creek, a small left-hand tributary of Shenandoah River in Frederick County.  
**Abrams Falls**; post village in Washington County.  
**Abrams Mount**; summit in Rockingham County.  
**Acadia**; village in Lee County.  
**Accakeek**; creek, a small right-hand tributary to Potomac River in Stafford County.  
**Accomac**; county, situated on the eastern shore of Chesapeake Bay. The surface is low and level, and much of it, especially near the coast on either side, is marshy. It is but little elevated above tide. The area is 478 square miles. Population, 32,570—white, 20,743; negro, 11,825; foreign born, 65. County seat, Accomac. The mean magnetic declination in 1900 was 4° 35'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the New York, Philadelphia and Norfolk Railroad.  
**Accomac**; county seat of Accomac County.  
**Accotink**; post village in Fairfax County on the Washington Southern Railroad.  
**Accotink**; creek, a small right-hand tributary of Potomac River in Fairfax County.  
**Accotink**; bay, an arm of Potomac River in Fairfax County.  
**Achilles**; post village in Gloucester County.  
**Acorn**; post village in Halifax County.  
**Acteon**; post village in Prince Edward County.  
**Ada**; post village in Fauquier County.  
**Adamsgrove**; post village in Southampton County on the Southern Railway.  
**Adams**; peak in South Mountain. Elevation, 2,990.  
**Adelphia**; post village in Scott County.  
**Aden**; post village in Prince William County.  
**Adial**; post village in Nelson County.

- Adlai**; post village in Augusta County.  
**Admant**; post village in Lee County.  
**Adner**; post village in Gloucester County.  
**Adney**; gap in Blue Ridge, Franklin County.  
**Adonis**; post village in Halifax County.  
**Adria**; post village in Tazewell County.  
**Adriance**; post village in Cumberland County.  
**Advance Mills**; post village in Albemarle County.  
**Adwolf**; village in Smyth County.  
**Afton**; post village in Nelson County on the Chesapeake and Ohio Railway.  
Elevation, 1,407 feet.  
**Agee**; post village in Nelson County.  
**Agnewville**; post village in Prince William County.  
**Aguste**; post village in Isle of Wight County.  
**Ahala**; post village in Orange County.  
**Aid**; post village in Caroline County.  
**Aidyl**; post village in Southampton County.  
**Aiken**; swamp in Chesterfield County on James River.  
**Aily**; post village in Dickenson County.  
**Airfield**; post village in Southampton County.  
**Airmont**; post village in Loudoun County.  
**Airpoint**; post village in Roanoke County.  
**Aitlers**; run, a small left-hand tributary to Shenandoah River in Frederick County.  
**Aivland**; post village in Sussex County.  
**Ajax**; post village in Pittsylvania County on the Southern Railway.  
**Alanthus**; post village in Culpeper County.  
**Albano**; post village in Orange County.  
**Albemarle**; county, situated in the central part of the State in the Piedmont region and extends on the west to the summit of the Blue Ridge, there having an altitude in the summits of 3,000 feet. The county is traversed by a number of short ridges parallel to the Blue Ridge. In altitude its surface ranges from 300 to 3,000 feet. The area is 755 square miles. Population, 28,473—white, 18,135; negro, 10,337; foreign born, 214. Court-house located in Charlottesville. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio and the Southern railways.  
**Albemarle and Chesapeake**; canal, extending from the mouth of Southern Branch of Elizabeth River to North Landing River in Norfolk County.  
**Alberene**; post village in Albemarle County on the Chesapeake and Ohio Railway.  
**Albin**; post village in Frederick County.  
**Albro**; creek, a small right-hand branch of James River in Chesterfield County.  
**Alchie**; post village in Halifax County.  
**Alcoma**; post village in Buckingham County.  
**Alden**; post village in King George County.  
**Alderman**; post village in Floyd County.  
**Aldie**; post village in Loudoun County.  
**Alean**; post village in Franklin County.  
**Alexandria**; county, situated in the eastern part of the State along Potomac River, opposite the District of Columbia. It has a rolling surface, ranging from sea level to 400 feet. The chief city within its limits is Alexandria, formerly the county seat, but now independent in government. Area, 32 square miles. Population, 6,430—white, 3,963; negro, 2,467; foreign born, 294. County seat, Fort Myer. The mean magnetic declination in 1900 was 4° 30'. The mean annual rainfall is 40 to 50 inches, and the temperature 55°.

**Alexandria**; city, independent, with a population of 14,528, on the Baltimore and Ohio, the Chesapeake and Ohio, the Southern, the Washington, Alexandria and Mount Vernon Electric, and the Washington Southern railroads.

**Alex**; run, a small right-hand tributary of James River in Botetourt County.

**Alfonso**; post village in Lancaster County.

**Alfred**; post village in Albemarle County.

**Alfred**; fork, a small right-hand branch of Knox Creek in Buchanan County.

**Algoma**; village in Franklin County.

**Alhambra**; post village in Nelson County.

**Alleghany**; county, situated in the western part of the State in the Appalachian Valley. The surface consists of a close alternation of sandstone ridges and limestone valleys. It is drained by numerous small streams of James River. Area, 452 square miles. Population, 16,320—white, 12,315; negro, 4,013; foreign born, 168. County seat, Covington. The mean magnetic declination in 1900 was  $1^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**Alleghany**; tunnel in Alleghany Mountains on the State line in Greenbrier and Alleghany counties. Altitude, 2,068 feet.

**Alleghany Spring**; post village in Montgomery County.

**Alleghany Station**; post village in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 2,056 feet.

**Allegheny Front**; the eastern escarpment of the Allegheny Plateau, traversing Virginia, West Virginia, Maryland, and Pennsylvania. Elevation in Virginia ranges from 2,000 to 4,000 feet.

**Allen**; creek, a small left-hand branch of James River in Amherst and Nelson counties.

**Allen**; mountains in Greene County. Elevation, 1,000 to 1,500 feet.

**Allenscreek**; post village in Amherst County on the Chesapeake and Ohio Railway.

**Allenslevel**; post village in Buckingham County.

**Alley**; post village in Scott County.

**Alliance**; post village in Surry County.

**Allisonia**; post village in Pulaski County on the Norfolk and Western Railway.

**Allmondsville**; post village in Gloucester County.

**Allwood**; post village in Amherst County.

**Alma**; post village in Page County.

**Almagro**; post village in Pittsylvania County.

**Almond**; village in Rockingham County.

**Alone**; post village in Rockbridge County.

**Alonzaville**; post village in Shenandoah County.

**Alpha**; post village in Buckingham County on the Chesapeake and Ohio Railway.

**Alphin**; post village in Rockbridge County.

**Alrich**; post village in Spottsylvania County on the Potomac, Fredericksburg and Piedmont Railroad.

**Althea**; post village in Campbell County.

**Alto**; post village in Amherst County.

**Alton**; post village in Halifax County on the Southern Railway.

**Altoona**; mines in Pulaski County.

**Alumine**; post village in Franklin County on the Norfolk and Western Railway. Altitude, 881 feet.

**Alumridge**; post village in Floyd County.

**Alum**; springs in Rockbridge County.

**Alumwells**; post village in Washington County.

**Alvah**; post village in Henry County.

**Alvarado**; post village in Washington County

**Amaryllis**; post village in Louisa County.

**Ambar**; post village in King George County.

**Amburg**; post village in Middlesex County.

**Amelia**; county, situated in the central part of the State in the Piedmont region. It has an undulating surface, ranging in altitude from 300 to 500 feet. Area, 355 square miles. Population, 9,037—white, 3,052; negro, 5,985; foreign born, 50. County seat, Amelia. The mean magnetic declination in 1900 was  $3^{\circ} 15'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern Railway.

**Amelia**; county seat of Amelia County on the Southern Railway. Altitude, 361 feet.

**Amherst**; county, situated in the central part of the State in the Piedmont region, its western boundary being the summit of the Blue Ridge. Its surface is somewhat broken by short ridges and isolated summits, outliers of the Blue Ridge. It is drained by James River. The altitude ranges from 500 feet up to 3,000 in the summits of the Blue Ridge. Area, 464 square miles. Population, 17,864—white, 10,807; negro, 7,057; foreign born, 70. County seat, Amherst. The mean magnetic declination in 1900 was  $3^{\circ} 10'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $50^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern and the Chesapeake and Ohio railways.

**Amherst**; county seat of Amherst County on the Southern Railway. Altitude, 629 feet.

**Amicus**; post village in Greene County.

**Amisville**; post village in Rappahannock County.

**Ammon**; post village in Amelia County.

**Amos**; creek, a small tributary to Copper Creek in Scott County.

**Amos**; post village in Floyd County.

**Amsterdam**; post village in Botetourt County.

**Amy**; post village in Amherst County.

**Ancella**; post village in Grayson County.

**Anchor**; post village in Surry County.

**Anderson**; post village in Augusta County on the Big Stony Railway.

**Andersonville**; post village in Buckingham County.

**Andrews**; post village in Spotsylvania County.

**Angels Rest**; mountain in Giles County. Elevation, 3,600 feet.

**Angola**; creek, a small left-hand branch of Appomattox River in Cumberland County.

**Angola**; post village in Cumberland County.

**Ann**; post village in Lee County.

**Annandale**; post village in Fairfax County.

**Annex**; post village in Augusta County.

**Anstelle**; post village in Botetourt County.

**Ante**; post village in Brunswick County.

**Antelope**; post village in Rockingham County.

**Anthony Knobs**; summits in Botetourt County. Elevation, 1,500 to 2,500 feet.

**Anthony Mill**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Anthony**; ferry over Roanoke River in Pittsylvania County.

**Anthony**; ford in Roanoke River in Franklin County.

**Antioch**; post village in Fluvanna County on Farmville and Powhatan Railroad. Altitude, 487 feet.

**Antlers**; post village in Mecklenburg County.

**Appalachia**; post village in Wise County on the Interstate and the Louisville and Nashville railroads.

**Appleberry**; mountains in Albemarle County. Elevation, 1,000 to 1,500 feet.

**Applegrove**; post village in Louisa County.

**Apple Orchard**; summits in Botetourt County.

**Appold**; post village in Botetourt County.

**Appomattox**; county, situated in the southern part of the State in the Piedmont region. It has an undulating surface, with an altitude ranging from 400 to 800 feet. It is drained by James and Roanoke rivers; area, 342 square miles. Population, 9,662—white, 5,731; negro, 3,931; foreign born, 15. County seat, West Appomattox. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 50 to 60 inches, and the temperature 55° to 60°. The county is traversed by the Norfolk and Western Railway.

**Appomattox**; post village in Appomattox County on the Norfolk and Western Railway. Altitude, 825 feet.

**Appomattox**; river which heads in the Piedmont region and flows in a sinuous eastward course to its junction with the James. Length, 130 miles; navigable to Petersburg.

**Aqua**; post village in Rockbridge County.

**Aquia**; creek, a small right-hand branch of Potomac River in Stafford County.

**Aral**; post village in Carroll County.

**Ararat**; post village in Patrick County.

**Ararat**; river, a left-hand branch of Yadkin River, rising in Patrick County.

**Arborhill**; post village in Augusta County.

**Arbutus**; post village in Grayson County.

**Arcanum**; post village in Buckingham County.

**Archer Knob**; summit in North Mountain.

**Archie**; post village in Culpeper County.

**Arch Mills**; post village in Botetourt County.

**Arco**; post village in Warren County.

**Arcola**; post village in Loudoun County.

**Arcturus**; village in Fairfax County on the Washington, Alexandria and Mount Vernon Electric Railway.

**Ark**; post village in Gloucester County.

**Arkton**; village in Rockingham County.

**Arlington**; post village in Alexandria County on the Washington, Alexandria and Mount Vernon Electric Railway.

**Armel**; post village in Frederick County.

**Armstrong**; post village in Bath County.

**Arnold**; creek, a small right-hand branch of James River in Rockbridge County.

**Arnold**; valley in the southern part of Rockbridge County.

**Arringdale**; post village in Southampton County on the Southern Railway.

**Arrington**; post village in Nelson County on the Southern Railway. Altitude, 692 feet.

**Arritts**; post village in Alleghany County.

**Arthur**; marshy creek tributary to Rowanty Creek, a swamp in Dinwiddie County.

**Artrip**; post village in Russell County on the Norfolk and Western Railway. Altitude, 1,560 feet.

**Arvonias**; post village in Buckingham County on the Chesapeake and Ohio Railway.

**Asberrys**; post village in Tazewell County.

**Ashburn**; post village in Loudoun County.

**Ashby**; gap in the Blue Ridge in Clarke County.

**Ashby**; post village in Cumberland County on the Norfolk and Western Railway. Altitude, 597 feet.

**Ashcake**; post village in Hanover County on the Chesapeake and Ohio Railway. Altitude, 199 feet.

**Ash Camp**; creek, a small left-hand tributary to Roanoke River in Charlotte County.

**Ashgrove**; post village in Fairfax County.

**Ash Hollow**; run, a small left-hand tributary to Shenandoah River in Frederick County.

**Ashland**; town in Hanover County on the Richmond, Fredericksburg and Potomac Railroad. Population, 1,147. Altitude, 221 feet.

**Ashton**; creek, a small right-hand tributary to James River in Chesterfield County.

**Aspenview**; post village in Brunswick County.

**Aspenwall**; post village in Charlotte County.

**Assamoosick**; creek, a left-hand branch of Nottoway River in southeast Virginia.

**Assamoosick**; post village in Southampton County.

**Assawoman**; post village in Accomac County.

**Athlone**; village in Rockingham County.

**Athos**; post village in Orange County.

**Atkins**; post village in Smyth County on the Norfolk and Western Railway. Altitude, 2,279 feet.

**Atlantic**; post village in Accomac County.

**Atlas**; post village in Pittsylvania County.

**Atlee**; post village in Hanover County on the Chesapeake and Ohio Railway. Altitude, 202 feet.

**Atoka**; post village in Fauquier County.

**Attoway**; post village in Smyth County.

**Auburn**; post village in Fauquier County.

**Auburn Mills**; post village in Hanover County.

**Augusta**; county, situated in the western part of the State in the Appalachian Valley, its eastern boundary being the summit of the Blue Ridge; its surface is undulating and but little broken. It is drained mainly northward into branches of Shenandoah River. The altitude ranges from 1,200 to 4,500 feet in Elliott Knob. Area, 1,012 square miles. Population, 32,370—whites, 28,670; negro, 5,700; foreign born, 107. County seat, Staunton. The mean magnetic declination in 1900 was 2° 15'. The mean annual rainfall is 50 to 60 inches, and the temperature 50 to 55°. The county is traversed by the Baltimore and Ohio, the Chesapeake and Ohio, and the Norfolk and Western railroads.

**Augusta Springs**; post village in Augusta County on the Chesapeake and Ohio Railway.

**Augusta White Sulphur**; springs in Augusta County.

**Austin**; creek, a small right-hand tributary to James River in Buckingham County.

**Austin**; run, a small right-hand tributary to Potomac River in Stafford County.

**Austinville**; post village in Wythe County on the Norfolk and Western Railway.

**Autumn**; post village in Scott County.

**Avalon**; post village in Northumberland County.

**Averett**; post village in Mecklenburg County.

**Avis**; post village in Augusta County.

**Avon**; post village in Nelson County.

**Axtell**; post village in Buckingham County on the Danville and Western Railway.

**Axton**; post village in Henry County on the Danville and Western Railway. Altitude, 1,020 feet.

**Ayers**; post village in Scott County.

**Aylett**; post village in King William County.

**Aylmer**; post village in Nelson County.

**Azen**; post village in Washington County.

**Bachelors Hall**; post village in Pittsylvania County.

**Back**; bay, a lagoon on the southeast coast, separated from the Atlantic Ocean by a sand bar.



- Back**; creek, a small left-hand tributary to Goose Creek in Campbell County.
- Back**; creek, a small right-hand branch of Jackson River in Highland County.
- Back**; creek, a left-hand tributary of James River in Bath and Highland counties.
- Back**; creek, a small left-hand tributary to James River in Rockbridge County.
- Back**; creek, a small right-hand tributary to James River in Botetourt County.
- Back**; creek, a small right-hand branch of Potomac River in Frederick County, Va., and Berkeley County, W. Va.
- Back**; creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Back**; creek, a right-hand branch of Roanoke River in Roanoke County.
- Back**; creek, a small left-hand tributary to Shenandoah River in Augusta County.
- Back**; creek, a small right-hand tributary to Shenandoah River in Augusta County.
- Back**; run, a small left-hand branch of James River in Rockbridge County.
- Backbay**; post village in Princess Anne County on the Norfolk and Southern Railroad.
- Backbone**; post village in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 1,670 feet.
- Back Creek**; mountains in Botetourt County. Elevation, 2,000 feet.
- Back Creek**; mountains in Highland and Bath counties. Elevation, 2,000 to 4,000 feet.
- Bacon**; post village in James City County.
- Bacons Castle**; post village in Surry County.
- Baffle**; post village in Southampton County.
- Bagby**; post village in Caroline County.
- Bagleys Mills**; post village in Lunenburg County.
- Bailey**; creek, a small left-hand branch of James River in Henrico County.
- Bailey**; creek, a small right-hand tributary to James River in Prince George County.
- Bailey**; post village in Tazewell County on the Chesapeake and Ohio Railway. Altitude, 2,600 feet.
- Bailey**; mountain in Nelson County.
- Bailey Crossroads**; post village in Fairfax County.
- Baileyville**; post village in Charlotte County.
- Baker**; creek, a small left-hand tributary to Shenandoah River in Augusta County.
- Baker**; mountain in Prince Edward County.
- Baker Mines**; post village in Carroll County.
- Bakers Mill**; village in Rockingham County.
- Balcony Falls**; post village in Rockbridge County on the Chesapeake and Ohio Railway. Altitude, 712 feet.
- Bald**; mountain in Craig County. Elevation, 1,500 to 2,500 feet.
- Bald**; mountain ridge in Augusta County. Elevation, 3,000 to 4,000 feet.
- Bald Knob**; summit in Amherst County.
- Bald Knob**; summit in Appomattox County.
- Bald Knob**; summit in Augusta County. Elevation, 4,410 feet.
- Bald Knob**; summit in Franklin County. Elevation, 1,421 feet.
- Bald Knob**; summit in Salt Pond Mountain in Giles County. Elevation, 4,348 feet.
- Bald Knob**; summit in Warm Spring Mountain. Elevation, 4,245 feet.
- Baldwin**; ridge in Fauquier County. Elevation, 500 feet.
- Baldwin Station**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 970 feet.
- Bales**; post village in Lee County.
- Balham**; post village in Goochland County.
- Ball**; mountain in Nelson County.
- Ballard**; post village in Patrick County.
- Ballinger**; creek, a small left-hand tributary to James River in Fluvanna County.

- Ballinger**; creek, a small left-hand branch of James River in Albemarle County.
- Ball Room**; mountain in Nelson County.
- Ballston**; post village in Alexandria County.
- Ballsville**; post village in Powhatan County on the Farmville and Powhatan Railroad. Altitude, 397 feet.
- Balty**; post village in Caroline County.
- Banco**; post village in Madison County.
- Bandana**; post village in Hanover County.
- Bandy**; post village in Tazewell County.
- Bane**; post village in Giles County.
- Banister**; left-hand branch of Dan River in Pittsylvania and Halifax counties.
- Banister**; post village in Pittsylvania County on the Norfolk and Western Railway. Altitude, 364 feet.
- Banks**; mountain in Madison County.
- Banks**; post village in Essex County.
- Banks Mountain**; summit in Amherst County. Elevation, 2,000 feet.
- Banner**; post village in Wise County.
- Baptist**; valley in Tazewell County.
- Baptist Valley**; post village in Tazewell County.
- Barb**; post village in Shenandoah County.
- Barbers**; creek, a small right-hand tributary to Jackson River in Craig County.
- Barbett**; creek, a small right-hand tributary to New River in Carroll County.
- Barbett Knob**; summit in Carroll County. Elevation, 3,034 feet.
- Barboursville**; post village in Orange County on the Southern Railway.
- Barcroft**; post village in Alexandria County on the Southern Railway.
- Barden**; run, a small right-hand tributary to James River in Botetourt County.
- Bare**; mountain, summit in Augusta County.
- Barhamsville**; post village in New Kent County.
- Bark Camp**; small right-hand branch of New River in Pulaski County.
- Barker Mill**; pond in Hanover County on Elder Creek.
- Barley**; post village in Greensville County.
- Barlow**; village in Lee County.
- Barnesville**; post village in Charlotte County.
- Barnett**; village in Russell County.
- Barnhardt**; creek, a small right-hand branch of Roanoke River in Roanoke County.
- Barque**; post village in Campbell County.
- Barrel**; point of land in Isle of Wight County, extending into James River.
- Barrenridge**; post village in Augusta County.
- Barren Springs**; post village in Wythe County on the Norfolk and Western Railway. Altitude, 1,908 feet.
- Barrmoor**; post village in Smyth County.
- Barrows Mill**; village in Henry County.
- Barrows Store**; post village in Brunswick County.
- Bartee**; post village in Norfolk County.
- Barterbrook**; post village in Augusta County.
- Barton Heights**; town in Henrico County. Population, 763.
- Basham**; post village in Floyd County.
- Basic City**; town in Augusta County on the Chesapeake and Ohio and the Norfolk and Western railways. Population, 1,270.
- Baskerville**; post village in Mecklenburg County on the Southern Railway.
- Bass**; creek, a small left-hand branch of Appomattox River in Chesterfield County.
- Basses**; post village in Halifax County.
- Bassetts**; post village in Henry County on the Norfolk and Western Railway. Altitude, 740 feet.

**Bassil**; post village in Patrick County.

**Bateman**; post village in Patrick County.

**Batesville**; post village in Albemarle County.

**Bath**; county, situated in the western part of the State in the Appalachian Valley.

Its surface consists of an alternation of sandstone ridges and limestone valleys. It is drained by branches of James River. The altitude ranges from 1,100 up to 4,000 feet. Area, 548 square miles. Population, 5,595—white, 4,589; negro, 1,006; foreign born, 66. County seat, Warm Springs. The mean magnetic declination in 1900 was 2° 15'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Chesapeake and Ohio Railway.

**Batna**; post village in Culpeper County.

**Batt**; post village in Gloucester County.

**Batten**; post village in Isle of Wight County.

**Battersea**; canal in Dinwiddie County extending along Appomattox River.

**Battery**; post village in Essex County.

**Battery**; creek, a small right-hand branch of James River in Bedford County.

**Batterypark**; post village in Isle of Wight County.

**Battle**; run, a small right-hand tributary to Rappahannock River in Rappahannock County.

**Battle**; mountains in Rappahannock County. Elevation, 1,000 feet.

**Battlehill**; post village in Roanoke County.

**Bay**; post village in Floyd County.

**Bayard**; post village in Warren County.

**Bayford**; post village in Northampton County.

**Baylor**; post village in Grayson County.

**Baynesville**; post village in Westmoreland County.

**Bayon**; post village in Halifax County.

**Bayport**; post village in Middlesex County.

**Bays Mill**; creek, a small left-hand tributary to Shenandoah River in Augusta County.

**Bayview**; post village in Northampton County.

**Baywood**; post village in Grayson County.

**Beach**; post village in Chesterfield County on the Farmville and Powhatan Railroad. Altitude, 283 feet.

**Beachem**; run, a small right-hand tributary to Chickahominy River in Henrico County.

**Beachland**; post village in Surry County.

**Beacon Quarter**; branch, a small left-hand tributary to James River in Henrico County.

**Beagle**; gap in the Blue Ridge in Augusta County.

**Beahm**; post village in Page County.

**Bealeton**; post village in Fauquier County on the Southern Railway. Altitude, 290 feet.

**Beamer Knob**; summit in Carroll County. Elevation, 3,400 feet.

**Beamon**; post village in Nansemond County on the Southern Railway.

**Bean**; branch, a small right-hand tributary to Potomac River in Fauquier County.

**Bear**; creek, a small left-hand tributary to Guest River in Wise County.

**Bear**; creek, a small right-hand branch of Middle Fork of Holston River in Smyth County.

**Bear**; creek, a small left-hand tributary to Roanoke River in Campbell County.

**Bear**; mountain in Amherst County. Elevation, 1,500 feet.

**Bear**; mountain in Augusta County. Elevation, 2,500 feet.

**Bear**; mountain in Highland County.

- Beard**; mountains in Bath County. Elevation, 1,500 to 2,500 feet.
- Bear Garden**; creek, a small right-hand branch of James River in Buckingham County.
- Bear Garden**; run, a small right-hand tributary to Potomac River in Frederick County.
- Bear Lithia**; post village in Rockingham County.
- Bear Pen**; small left-hand branch of Pigeon Creek in Wise County.
- Beartown**; mountain in Russell County. Elevation, 4,710 feet.
- Bearwallow**; mountain in Buchanan County. Altitude, 3,170 feet.
- Bearwallow**; post village in Buchanan County.
- Bear Wallow**; run, a small right-hand tributary to James River in Botetourt County.
- Beauford**; post village in Floyd County.
- Beautiful**; run, a small left-hand tributary to Rapidan River in Madison County.
- Beaver**; branch, a small right-hand tributary to New River in Grayson County.
- Beaver**; small right-hand branch of Cripple Creek in Wythe County.
- Beaver**; creek, a left-hand tributary to Dan River in Henry County.
- Beaver**; creek, a small left-hand tributary to James River in Amherst County.
- Beaver**; creek, a small right-hand branch of James River in Campbell County.
- Beaver**; creek, a small right-hand tributary to New River in Grayson and Carroll counties.
- Beaver**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.
- Beaver**; creek, a small left-hand tributary to Shenandoah River in Rockingham County.
- Beaver**; fork, a small tributary to Botetourt River in Tazewell County.
- Beaverdam**; post village in Hanover County on the Chesapeake and Ohio Railway. Altitude, 282 feet.
- Beaverdam**; creek, a small right-hand tributary to Potomac River in Loudoun County.
- Beaverdam**; creek, a small left-hand branch of Chickahominy River in Hanover County.
- Beaverdam**; creek, a small left-hand branch of James River in Goochland County.
- Beaverdam**; creek, a small left-hand tributary to James River in Louisa County.
- Beaverdam**; creek, a small right-hand tributary to New River in Carroll County.
- Beaverdam**; creek, a small right-hand tributary to New River in Floyd County.
- Beaverdam**; creek, a small left-hand tributary to New River in Wythe County.
- Beaverdam**; creek, a small left-hand tributary to Powell River in Wise County.
- Beaverdam**; creek, a small left-hand branch of Roanoke River in Bedford County.
- Beaverdam**; creek, a small left-hand tributary to South Fork of Holston River in Washington County.
- Beaverdam**; creek, a small left-hand tributary to York River in Hanover County.
- Beaverdam Mills**; post village in Hanover County.
- Beaverpond**; branch, a small left-hand tributary to Roanoke River in Campbell County.
- Beaverpond**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.
- Beaverpond**; creek, a small right-hand tributary to Appomattox River in Amelia County.
- Beaverpond**; post village in Amelia County.
- Beazley**; ford across Ducker Creek in Buckingham County.
- Beazley**; post village in Essex County.
- Beck**; post village in Prince Edward County.
- Beckham**; post village in Appomattox County.
- Beckner**; gap in Catawba Mountains, caused by Mason Creek, in Roanoke County.

**Beck Ridge**; mountains extending from Washington County, Va., into Sullivan County, Tenn.

**Becky**; creek, a small right-hand branch of Roanoke River in Franklin County.

**Bedford**; county, situated in the southern part of the State in the upper part of the Piedmont region, and consisting of a rolling and somewhat broken country, with numerous short ridges, which are outliers of the Blue Ridge, in the upper part of the county. It is drained by Roanoke River and its tributaries. The altitude ranges from 600 up to 4,000 feet in the Peaks of Otter, which forms the northwestern limit of the county. Area, 729 square miles. Population, 30,356—white, 20,617; negro, 9,739; foreign born, 71. County seat, Bedford City. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 50 to 60 inches, and the temperature 55° to 60°. The county is traversed by the Norfolk and Western Railway.

**Bedford City**; county seat of Bedford County on the Norfolk and Western Railway. Population, 2,416.

**Bedford Springs**; post village in Campbell County.

**Bee**; small right-hand branch of Slate Creek in Buchanan County.

**Bee**; post village in Dickenson County.

**Beech**; creek, a small left-hand tributary to Dry Fork, rising in Tazewell County.

**Beech Lick Knob**; summit in Rockingham County. Elevation, 3,000 feet.

**Beechnut**; post village in Mecklenburg County.

**Beechspring**; village in Lee County.

**Beechtree**; creek, a small right-hand branch of Roanoke River in Pittsylvania County.

**Beesville**; post village in Buckingham County.

**Behams**; gap in the Blue Ridge in Rappahannock County.

**Belamar**; post village in Hanover County.

**Beldor**; post village in Rockingham County.

**Belfast Mills**; post village in Russell County.

**Belfield**; post village in Greenesville County.

**Belgrade**; post village in Shenandoah County.

**Belinda**; post village in Accomac County.

**Bell**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Bellamy**; post village in Scott County.

**Bellbranch**; post village in Buckingham County.

**Belle**; small island in James River in Henrico County.

**Belle Coe**; creek, a small left-hand tributary to James River in Rockbridge County.

**Belle Hampton**; post village in Pulaski County.

**Bellehaven**; town in Accomac County. Population, 331.

**Bellevue**; post village in Bedford County on the Norfolk and Western Railway. Altitude, 848 feet.

**Bellfair Mills**; post village in Stafford County.

**Bells**; post village in Bedford County.

**Bells Crossroads**; post village in Louisa County.

**Bells Valley**; post village in Rockbridge County on the Chesapeake and Ohio Railway. Altitude, 1,507 feet.

**Belmont**; bay, an arm of Potomac River extending into Prince William and Fairfax counties.

**Belmont**; post village in Spottsylvania County.

**Belona**; post village in Powhatan County on the Farmville and Powhatan Railroad. Altitude, 368 feet.

**Belroi**; post village in Gloucester County.

**Belsches**; post village in Sussex County.

- Ben**; post village in Alleghany County.  
**Bena**; post village in Gloucester County.  
**Benbow**; post village in Tazewell County.  
**Bend**; ford across Roanoke River in Roanoke County.  
**Bend**; post village in Louisa County.  
**Benges**; small right-hand branch of Powell River in Wise County.  
**Benges**; gap in Little Stone Mountain made by Benges Branch.  
**Benhams**; post village in Washington County on the Virginia and Southwestern Railway.  
**Benhur**; post village in Lee County on the Louisville and Nashville Railroad.  
**Bennettcreek**; post village in Nansemond County.  
**Bennetts Mill**; post village in Montgomery County.  
**Bennis Church**; post village in Isle of Wight County.  
**Bens**; branch, a small right-hand tributary to Jackson River in Alleghany County.  
**Bensons**; run, a small left-hand tributary to James River in Highland County.  
**Bent**; creek, a small right-hand branch of Appomattox River in Amelia County.  
**Bent**; creek, a small right-hand branch of James River in Appomattox County.  
**Bent**; mountain in Floyd County.  
**Bent**; mountains in Roanoke County.  
**Bentcreek**; post village in Appomattox County.  
**Bentley**; branch, a small left-hand tributary to New River in Pulaski County.  
**Bent Mountain**; post village in Roanoke County.  
**Bentonville**; post village in Warren County on the Norfolk and Western Railway. Altitude, 729 feet.  
**Berea**; post village in Stafford County.  
**Berkeley**; town in Norfolk County on the Norfolk and Southern Railroad. Population, 4,988.  
**Berlin**; post village in Southampton County.  
**Bermuda Hundred**; post village in Chesterfield County.  
**Bernard**; creek, a small right-hand branch of James River in Powhatan County.  
**Berringer**; mountain in Montgomery County.  
**Berry**; creek, a small right-hand tributary to New River in Floyd County.  
**Berryman**; post village in Surry County.  
**Berrys**; post village in Clarke County.  
**Berryville**; town and county seat of Clarke County on the Norfolk and Western Railway. Altitude, 968 feet. Population, 938.  
**Bertha**; post village in Wythe County on the Norfolk and Western Railway.  
**Berthaville**; post village in King George County.  
**Berton**; post village in Giles County on the Norfolk and Western Railway. Altitude, 1,655 feet.  
**Beas**; post village in Alleghany County.  
**Beasemer**; post village in Botetourt County on the Chesapeake and Ohio Railway.  
**Bestland**; post village in Essex County.  
**Bethel Academy**; post village in Fauquier County.  
**Betsey**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.  
**Botsey Bell**; summit in Augusta County. Elevation, 1,500 feet.  
**Betty**; creek, a small right-hand branch of Roanoke River in Franklin County.  
**Beulahville**; post village in King William County.  
**Beverly**; post village in Pittsylvania County.  
**Bevi**; creek, a small left-hand tributary to Shenandoah River in Augusta County.  
**Bevila**; bridge across Appomattox River from Chesterfield into Amelia County.  
**Bibb**; post village in Louisa County on the Norfolk and Western Railway.  
**Bible**; run, a small right-hand tributary to Shenandoah River in Rockingham County.

**Bickley Mill**; post village in Russell County.

**Big**; branch, a small right-hand tributary to Jackson River in Craig County.

**Big**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.

**Big**; small right-hand branch of New River in Carroll County.

**Big**; branch, a small right-hand tributary to North Fork of Holston River, rising in Scott County.

**Big**; small right-hand branch of Clinch River rising in Russell County.

**Big**; creek, a small right-hand tributary to Clinch River in Tazewell County.

**Big**; island on James River in Amherst County.

**Big**; run, a small right-hand tributary to New River in Floyd County.

**Big**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Big**; tunnel, in Montgomery County on the Norfolk and Western Railway.

**Big Bundy**; creek, a small right-hand tributary to North Fork of Powell River.

**Big Cedar**; creek, a left-hand branch of Clinch River, rising in Russell County.

**Big Cobbler**; mountains in Fauquier County. Elevation, 1,000 to 1,500 feet.

**Big Cranberry**; creek, a small right-hand tributary to New River in Carroll County.

**Bigcreek**; post village in Tazewell County.

**Bigcut**; post village in Scott County.

**Big Fork Ridge**; mountains in Buchanan County. Elevation, 2,500 feet.

**Big Fox**; creek, a small right-hand tributary to Russell Fork, rising in Buchanan County.

**Biggs**; mountain in Botetourt and Rockbridge counties.

**Biggs**; run, a small right-hand tributary to James River in Botetourt County.

**Bighill**; post village in Lee County on the Chesapeake and Ohio Railway.

**Big Hollow**; small right-hand branch of Levisa Fork in Buchanan County.

**Big Hound**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.

**Big House Mountain**; summit in Rockbridge County. Elevation, 3,612 feet.

**Big Indian**; run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Big Island**; post village in Bedford County on the Chesapeake and Ohio Railway. Altitude, 596 feet.

**Big Laurel**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Big Levels**; summits in the Blue Ridge in Augusta County.

**Big Lick Draft**; small right-hand tributary to Jackson River in Bath County.

**Big Licking**; creek, a small left-hand branch of James River in Goochland County.

**Big Moccasin**; creek, a left-hand tributary to Clinch River, rising in Russell County.

**Big Moccasin**; creek, a small right-hand branch of North Fork of Holston River in Scott County.

**Big Nottoway**; river, a head branch of Nottoway River, rising in Lunenburg County and forming the boundary between Nottoway and Lunenburg counties.

**Big Otter**; creek, a left-hand branch of Roanoke River, formed by North and South forks, in Bedford County.

**Big Piney**; mountains in Amherst County. Elevation, 1,000 to 2,000 feet.

**Big Prator**; creek, a small left-hand branch of Levisa Fork, rising in Buchanan County.

**Big Reed Island**; creek, a right-hand branch of New River in Carroll County.

**Big Ridge**; mountain in Bland County. Elevation, 3,000 to 4,000 feet.

**Big Ridge**; mountains in Augusta County.

**Big Ridge**; mountains in Scott County.

**Bigriver**; post village in Augusta County.

**Bigrock**; post village in Buchanan County.

- Big Shuffle**; branch, a small left-hand tributary to New River in Pulaski County.
- Big Spring**; small right-hand branch of Walker Creek in Giles County.
- Big Spy**; summit in the Blue Ridge in Augusta County.
- Big Stone**; gap in Little Stone Mountain, made by Powell River, in Wise County.
- Bigstone Gap**; town in Wise County on the Louisville and Nashville and the Virginia and Southwestern railroads. Altitude, 1,966 feet. Population, 1,617.
- Big Stone Ridge**; mountains in Tazewell County.
- Big Tom**; creek, a small right-hand tributary to Clinch River, rising in Wise County.
- Big Town Hill**; creek, a small right-hand branch of Clinch River in Tazewell County.
- Bigtunnel**; post village in Montgomery County.
- Bill Young**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.
- Bill Young**; gap in Keen Mountain in Buchanan County.
- Binfords**; post village in Brunswick County.
- Binns Hall**; post village in Charles City County.
- Birch**; post village in Halifax County.
- Birchen**; creek, a small left-hand tributary to Nottoway River in Nottoway County.
- Birchleaf**; post village in Dickenson County.
- Birds**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- Birdanest**; post village in Northampton County on the New York, Philadelphia and Norfolk Railroad.
- Birdsong**; post village in Sussex County.
- Birdwood**; post village in Albemarle County.
- Biscoe**; post village in King and Queen County.
- Bishops**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Black**; creek, a small right-hand tributary to James River in Roanoke County.
- Black**; creek, a small right-hand branch of Powell River in Wise County.
- Blackberry**; village in Henry County.
- Blackey**; fork, a small left-hand fork of Knox Creek in Buchanan County.
- Black Oak**; mountains in Shenandoah County.
- Black Oak Ridge**; mountains in Bath, Rockbridge, and Augusta counties. Elevation, 2,000 feet.
- Blackridge**; post village in Mecklenburg County.
- Blackrock Springs**; post village in Augusta County.
- Blacks**; gap in North Mountains in Botetourt County.
- Blacksburg**; town in Montgomery County. Population, 768. Altitude, 2,170 feet.
- Blackstone**; town in Nottoway County on the Norfolk and Western Railway. Population, 585.
- Blackwalnut**; post village in Halifax County.
- Blackwater**; creek, a small right-hand branch of Clinch River in Lee County, Va., and Hancock County, Tenn.
- Blackwater**; ford across Roanoke River in Roanoke County.
- Blackwater**; post village in Lee County.
- Blackwater**; river, a small left-hand tributary to Staunton River, formed by North and South forks.
- Blackwater**; river, a right-hand branch of Roanoke River in Franklin County.
- Blackwater**; river, a small right-hand branch of North Landing River in Norfolk County.
- Blackwater**; river of southeast Virginia, one of the sources of Chowan River.
- Blackwater**; swamp in Prince George County.
- Blackwells**; post village in Northumberland County.
- Blair**; ferry in New River in Grayson County.
- Blairs**; post village in Prince George County on the Norfolk and Western Railway.



**Blakes**; post village in Mathews County.

**Blanche**; post village in Dickenson County.

**Bland**; county, located in the western part of the State in the Appalachian Valley.

Its surface consists of an alternation of short parallel ridges and valleys. The elevation ranges from 2,000 up to nearly 4,000 feet above sea level. Area, 352 square miles. Population, 5,497—white, 5,285; negro, 212; foreign born, 6. County seat, Bland. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°.

**Bland**; county seat of Bland County.

**Bland**; creek, a small right-hand tributary to Appomattox River in Nottoway County.

**Blankenship**; village in Lee County.

**Blantons**; post village in Caroline County on the Chesapeake and Ohio Railway.

**Bleak**; post village in Fauquier County.

**Blenheim**; post village in Albemarle County.

**Blickville**; post village in Dinwiddie County.

**Bliss**; post village in Frederick County.

**Bloom**; post village in Frederick County on the Southern Railway.

**Bloomer**; post village in Scott County.

**Bloomfield**; post village in Loudoun County.

**Bloomtown**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Blossom Hill**; post village in Princess Anne County.

**Blount**; village in Bedford County.

**Bloxom**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Blue**; run, a small right-hand tributary to Rappahannock River in Orange County.

**Bluegrass**; post village in Russell County.

**Bluemont**; post village in Loudoun County.

**Blue Ridge Springs**; post village in Botetourt County on the Norfolk and Western Railway.

**Bluespring**; creek, a small right-hand tributary to James River in Alleghany County.

**Bluespring**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Bluespring Run**; post village in Alleghany County.

**Bluestone**; post village in Tazewell County on the Norfolk and Western Railway.

**Bluestone**; river, rising in Tazewell County, Va., and flowing northeast into New River in Summers County, W. Va.

**Bluff**; creek, a small left-hand tributary to James River in Amherst County.

**Bluff**; run, a small right-hand tributary to Mattaponi River in Spottsylvania County.

**Bluff City**; post village in Giles County.

**Bluff**; mountain in Amherst County. Elevation, 3,350 feet.

**Bluff Spur**; mountains in Wise County.

**Boards**; mountain in Bedford County. Elevation, 1,515 feet.

**Boatswain**; creek, a small left-hand branch of Chickahominy River in Hanover County.

**Boaz**; post village in Nelson County.

**Boaz Mountains**; summits in Albemarle County. Elevation, 1,500 to 2,000 feet.

**Bobs**; post village in Isle of Wight County.

**Bocock**; post village in Campbell County on the Norfolk and Western Railway. Altitude, 782 feet.

**Bodley**; post village in Augusta County.

**Bodycamp**; creek, a small left-hand tributary to Roanoke River in Bedford County.

- Bodycamp**; post village in Bedford County.
- Boer**; post village in Lancaster County.
- Boggs**; post village in Accomac County.
- Bohannon**; post village in Mathews County.
- Bolar**; post village in Bath County.
- Bold**; branch, a small left-hand tributary to Roanoke River in Bedford County.
- Bold Knob**; summit in Rockingham County.
- Boler**; mountains in Bath County. Elevation, 2,000 to 3,000 feet.
- Bolington**; post village in Loudoun County.
- Bolling**; post village in Buckingham County.
- Bolt**; post village in Carroll County.
- Bolton**; village in Russell County.
- Bonair**; post village in Chesterfield County on the Southern Railway.
- Bonbrook**; creek, a small right-hand tributary to James River in Cumberland County.
- Bonbrook**; post village in Franklin County.
- Bond**; town in Wise County. Population, 295.
- Boner**; mountain in Warm Spring Mountain, Bath County.
- Bennie**; brook, a small left-hand branch of Shenandoah River in Rockingham County.
- Bonney**; cove in Back Bay in Princess Anne County.
- Bonney**; post village in Princess Anne County.
- Bonsacks**; post village in Roanoke County on the Norfolk and Western Railway.
- Bonton**; post village in Bedford County.
- Bony**; run, a small right-hand branch of South Fork of Roanoke River in Montgomery County.
- Booker**; post village in Sussex County.
- Boone**; run, a small left-hand branch of Shenandoah River in Rockingham County.
- Boone Mill**; post village in Franklin County on the Norfolk and Western Railway. Altitude, 1,113 feet.
- Boonesville**; post village in Albemarle County.
- Boonsboro**; post village in Bedford County.
- Boons Path**; post village in Lee County.
- Booth Knob**; summit in Floyd County.
- Borden**; post village in Shenandoah County.
- Bore Auger**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Borneo**; post village in Greene County.
- Borthwick**; post village in Dinwiddie County.
- Boston**; post village in Culpeper County on the Southern Railway. Altitude, 325 feet.
- Boswell**; post village in Cumberland County on the Chesapeake and Ohio Railway.
- Botetourt**; county, situated in the western part of the State in the Appalachian Valley, its southern boundary being the Blue Ridge. Its surface consists of narrow parallel ridges separated by limestone valleys. It is traversed by James River. The altitude ranges from 800 to 4,000 feet. Area, 548 square miles. Population, 17,161—white, 13,284; negro, 3,877; foreign born, 47. County seat, Fincaastle. The mean magnetic declination in 1900 was 1° 45'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Chesapeake and Ohio and the Norfolk and Western railways.
- Botetourt**; post village in Botetourt County.
- Botetourt**; springs in Roanoke County.
- Bottom**; creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Boulevard**; post village in New Kent County.
- Bowden**; post village in Halifax County.

- Bowers**; post village in Southampton County.  
**Bowershill**; post village in Norfolk County on the Seaboard Air Line Railway.  
**Bowlecamp**; creek, a small left-hand branch of Pond River in Wise County.  
**Bowlers Wharf**; post village in Essex County.  
**Bowles**; post village in Clarke County.  
**Bowling**; post village in Tazewell County on the Baltimore and Ohio Railroad.  
**Bowling Green**; county seat of Caroline County. Population, 458.  
**Bowling Green Ridge**; mountains in Wythe County. Elevation, 3,000 feet.  
**Bowmans**; post village in Shenandoah County on the Southern Railway.  
**Boxelder**; post village in Nansemond County.  
**Boxwood**; post village in Henry County on the Danville and Western Railway.  
**Boyce**; post village in Clarke County on the Norfolk and Western Railway. Altitude, 472 feet.  
**Boyd Tavern**; post village in Albermarle County.  
**Boydton**; county seat of Mecklenburg County on the Southern Railway. Population, 527.  
**Boyers Ferry**; post village in Grayson County.  
**Boykins**; town in Southampton County on the Seaboard Air Line Railway. Population, 224.  
**Bracey**; post village in Mecklenburg County on the Seaboard Air Line Railway.  
**Bracket**; post village in Hanover County.  
**Bradley Mill**; bridge across Swift Creek in Chesterfield County.  
**Bradleys Store**; post village in Charles City County.  
**Bradshaw**; creek, a small left-hand branch of North Fork of Roanoke River in Roanoke and Montgomery counties.  
**Bradshaw**; post village in Roanoke county on the Norfolk and Western Railway.  
**Brake**; small right-hand branch of Roanoke River in Montgomery County.  
**Branchville**; post village in Southampton County on the Seaboard Air Line Railway.  
**Brand**; small right-hand branch of Cripple Creek in Wythe County.  
**Brand**; post village in Page County on the Chesapeake and Ohio Railway. Altitude, 1,330 feet.  
**Brander**; bridge across Swift Creek in Chesterfield County.  
**Brandon**; post village in Prince George County.  
**Brandy Station**; post village in Culpeper County on the Southern Railway.  
**Brandywine**; post village in Caroline County.  
**Brattans**; mountains in Rockbridge County. Elevation, 2,000 to 2,500 feet.  
**Brays**; post village in Essex County.  
**Breeze**; post village in Pittsylvania County.  
**Bremo**; creek, a small left-hand branch of James River in Fluvanna County.  
**Bremobluff**; post village in Fluvanna County.  
**Brents**; point on Potomac River in King George County.  
**Brentsville**; post village in Prince William County.  
**Brewster**; post village in Russell County.  
**Brian**; post village in Louisa County.  
**Briar Patch**; mountains in Grayson County. Elevation, 3,000 to 3,650 feet.  
**Brickhaven**; post village in Alexandria County.  
**Brick Store**; village in Lee County.  
**Bridge**; cove in Back Bay in Princess Anne County.  
**Bridges**; post village in Gloucester County.  
**Bridgetown**; post village in Northampton County.  
**Bridgewater**; town in Rockingham County. Population, 384.  
**Bridle**; creek, a small right-hand branch of New River in Grayson County.  
**Bridlecreek**; post village in Grayson County.

**rierfield**; post village in Bedford County.

**rierhook**; post village in Buckingham County.

**riery**; branch, a small left-hand tributary to Shenandoah River in Rockingham County.

**riery**; creek, a small right-hand branch of Appomattox River in Prince Edward County.

**riery**; post village in Prince Edward County.

**riery**; run, a small left-hand tributary to James River in Albemarle and Fluvanna counties.

**riery Branch**; gap in Narrow Back Mountains, caused by Briery Branch, in Rockingham County.

**riery Branch**; wind gap in Shenandoah Mountains on the State line in Rockingham County, Va., and Pendleton County, W. Va.

**riery Branch Knob**; summit in Shenandoah Mountains on the State line between Virginia and West Virginia.

**riggs**; post village in Clarke County on the Norfolk and Western Railway.

**righton**; post village in Northampton County.

**rights**; post village in Pittsylvania County.

**rightwood**; post village in Madison County.

**rink**; post village in Greenville County.

**rio**; post village in Carroll County.

**ristersburg**; post village in Fauquier County.

**ristol**; city situated in Washington County, but independent in government; on the Holston Valley, the Norfolk and Western, the Southern, and the Virginia and Southwestern railways. Population, 4,579.

**ristow**; post village in Prince William County on the Southern Railway.

**ritain**; post village in Loudoun County.

**road**; bay near eastern coast in Princess Anne County.

**road**; creek, a small right-hand tributary to James River in Rockbridge County.

**road**; ford in Holston River in Smyth County.

**road**; run, a right-hand branch of Potomac River in Prince William County.

**road**; run, a small left-hand tributary to Shenandoah River in Augusta County.

**road**; run, a small right-hand tributary to Potomac River in Fauquier County.

**road**; run, a small right-hand tributary to James River in Craig County.

**road**; run, a small right-hand branch of Potomac River in Loudoun County.

**roadcreek**; post village in Princess Anne County.

**roaddus**; post village in Nelson County.

**roadford**; post village in Smyth County.

**road Hollow**; creek, a small left-hand branch of Walker Creek in Giles County.

**road Rock**; small right-hand branch of James River in Chesterfield County.

**road Run**; mountains in Craig County. Elevation, 1,500 to 2,000 feet.

**roadrun**; post village in Fauquier County on the Southern Railway.

**roadshoals**; ford across Little River in Montgomery County.

**roadshoals**; post village in Floyd County.

**roadwater**; post village in Northampton County.

**roadway**; town in Rockingham County on the Southern Railway. Population, 400.

**rock**; run, a small right-hand branch of Chickahominy River in Henrico County.

**rockett**; post village in Shenandoah County.

**rockroad**; post village in Spottsylvania County on the Potomac, Fredericksburg and Piedmont Railroad.

**rocks**; gap in Little North Mountain, caused by the North Fork of Shenandoah River.

**rodmax**; post village in Brunswick County.

- Brokenburg**; post village in Spottsylvania County.
- Bromley**; creek, a small right-hand branch of North Fork of Holston River in Washington County.
- Bronze**; post village in Carroll County.
- Brooke**; post village in Stafford County on the Richmond, Fredericksburg and Potomac Railroad.
- Brookewood**; post village in Augusta County.
- Brookhill**; post village in Henrico County.
- Brookings**; post village in Goochland County.
- Brooklyn**; village in Halifax County.
- Brookneal**; post village in Campbell County on the Norfolk and Western Railway.
- Brooks**; run, a small right-hand tributary to Rappahannock River in Culpeper County.
- Brooks**; ford in Blackwater River in Franklin County.
- Brookvale**; post village in Lancaster County.
- Brosville**; post village in Pittsylvania County.
- Brothers**; post village in Patrick County.
- Brow**; post village in Pittsylvania County.
- Brown**; gap in the Blue Ridge in Rockingham County.
- Brown**; mountain ridge in Augusta County.
- Brownallen**; post village in Buckingham County.
- Brown Mountain**; summit in Campbell County.
- Browns**; creek, a small left-hand tributary to James River in Amherst County.
- Browns**; landing on James River in Buckingham County.
- Browns**; mountain in Amherst County. Elevation, 2,000 to 2,500 feet.
- Browns**; peak in Wythe County. Elevation, 3,000 to 3,500 feet.
- Browns Store**; post village in Northumberland County.
- Brownsburg**; post village in Rockbridge County.
- Browns Cove**; post village in Albemarle County.
- Browntown**; post village in Warren County.
- Bruce**; village in Rockingham County on the Atlantic Coast Line Railroad.
- Brucetown**; post village in Frederick County.
- Bruceville**; post village in Lunenburg County.
- Brughs Mill**; post village in Botetourt County.
- Bruington**; post village in King and Queen County.
- Brumley**; creek, a small right-hand branch of North Fork of Holston River, rising in Washington County.
- Brumley Gap**; post village in Washington County.
- Brunswick**; county, situated in the southern part of the State in the eastern edge of the Piedmont region; it has a rolling surface, and is of slight elevation. Area, 529 square miles. Population, 18,217—white, 7,375; negro, 10,842; foreign born, 21. County seat, Lawrenceville. The mean magnetic declination in 1900 was 3° 15' W. The mean annual rainfall is 40 to 50 inches, and the temperature 55 to 60°. The county is traversed by the Southern and the Seaboard Air Line railways.
- Brush**; creek, a small left-hand branch of New River in Carroll County.
- Brush**; creek, a small right-hand branch of Little River in Montgomery County.
- Brush**; creek, a small right-hand branch of New River in Grayson County.
- Brush**; creek, a small right-hand tributary to Potomac River in Frederick County.
- Brush**; post village in Grayson County.
- Brushy**; mountain ridge in the western part of the State with an elevation of 2,000 to 3,000 feet.
- Brushy**; mountain in Rockbridge, Bath, and Alleghany counties. Elevation, 1,500 to 3,500 feet.

**brushy**; mountain in Pittsylvania County. Elevation, 1,000 feet.

**brushy**; mountain in Rockbridge County. Elevation, 2,000 feet.

**brushy**; run, a small right-hand tributary to James River in Botetourt County.

**brushy Hills**; summits in Rockbridge County. Elevation, 1,500 feet.

**brushy Mountain**; summit in Fauquier County. Elevation, 750 to 1,000 feet.

**brutus**; post village in Pittsylvania County.

**bryant**; post village in Nelson County.

**bryant**; ridge in Botetourt County. Elevation, 1,500 to 2,000 feet.

**brydie**; post village in Lunenburg County.

**buchanan**; county, situated in the western part of the State on the Alleghany Plateau, and is deeply dissected. It is drained by Levisa Fork of Big Sandy River. The altitude ranges from 1,000 to 3,700 feet at the summit. Area, 492 square miles. Population, 9,692—white, 9,687; foreign born, 4; and negro, 5. County seat, Grundy. The mean magnetic declination in 1900 was 30°. The mean annual rainfall 50 to 60 inches, and the temperature 50 to 55°.

**buchanan**; town in Botetourt County on the Chesapeake and Ohio and the Norfolk and Western railways. Altitude, 834 feet; population, 716.

**buck**; branch, a small left-hand tributary to Roanoke River in Appomattox County.

**buck**; creek, a small right-hand tributary to James River in Appomattox County.

**buck**; creek, a small left-hand tributary to James River in Nelson County.

**buck**; creek, a small left-hand branch of Powell River in Lee County.

**buck**; creek, a small right-hand tributary to Shenandoah River in Augusta County.

**buck**; mountain in Amherst County.

**buck**; mountain in Augusta County.

**buck**; mountain in Roanoke County. Elevation, 1,992 feet.

**buck**; mountains in Albemarle County. Elevation, 1,000 feet.

**buck**; mountains in Grayson County. Elevation, 4,680 feet.

**buck**; mountains in Rappahannock County. Elevation, 1,000 feet.

**buck**; run, a small left-hand tributary to Rappahannock River in Rappahannock County.

**buckeye**; mountains in Giles County. Elevation, 2,000 to 2,500 feet.

**buckhall**; post village in Prince William County.

**buck Hill**; summit in Highland County.

**buck Hill**; summit in Shenandoah County. Elevation, 1,500 feet.

**buckhorn**; creek, a small right-hand tributary to New River in Carroll County.

**buckhorn**; mountains in Tazewell, Giles, and Bland counties. Elevation 2,500 to 3,500 feet.

**buckhorn**; post village in Nansemond County.

**buckingham**; county, situated in the central part of the State in the Piedmont region on James River, which forms its southern boundary. Its surface is in the most part undulating, rising from 300 feet on James River to 1,500 feet in Spear Mountain, in the western part of the county. Area, 552 square miles. Population, 15,266—white, 7,415; negro, 7,851; foreign born, 65. County seat, Buckingham. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Southern Railway.

**buckingham**; county seat of Buckingham County. Altitude, 550 feet.

**buck Island**; creek, a small left-hand tributary to James River in Albemarle County.

**buckland**; post village in Prince William County.

**buckman**; run, a small right-hand tributary to Jackson River in Highland County.

**buck Mountain**; creek, a small left-hand tributary to James River in Albemarle County.

**buck Mountain**; creek, a small left-hand branch of James River in Nelson County.

**buckners Station**; post village in Louisa County on the Chesapeake and Ohio Railway.

- Buckskin;** creek, a small right-hand tributary to Appomattox River in Amelia County.
- Buckton;** post village in Warren County on the Southern Railway.
- Bucu;** post village in Dickinson County.
- Buddle;** post village in Wythe County.
- Buell;** post village in Norfolk County.
- Buena;** post village in Culpeper County.
- Buenavista;** city in Rockbridge County, but independent in government; population, 2,388; on the Chesapeake and Ohio and the Norfolk and Western railways.
- Buff;** branch, a small right-hand branch of Roanoke River in Franklin County.
- Buffalo;** branch, a small left-hand tributary to Shenandoah River in Augusta County.
- Buffalo;** creek, a small right-hand branch of Appomattox River in Prince Edward County.
- Buffalo;** creek, a small left-hand tributary to James River in Rockbridge County.
- Buffalo;** creek, a small left-hand tributary to James River in Nelson County.
- Buffalo;** creek, a small right-hand tributary to James River in Rockbridge County.
- Buffalo;** creek, a small right-hand branch of Roanoke River in Halifax County.
- Buffalo;** creek, a small left-hand tributary to Roanoke River in Bedford and Campbell counties.
- Buffalo;** creek, a small left-hand tributary to Roanoke River in Botetourt County.
- Buffalo;** ford over the North Fork of Holston River in Russell County.
- Buffalo;** gap, a small right-hand tributary to James River in Buchanan County.
- Buffalo;** gap in Little North Mountains, caused by Buffalo Branch, in Augusta County.
- Buffalo;** hill in Augusta County.
- Buffalo;** river, a left-hand tributary of James River, formed by North and South forks, in Amherst and Nelson counties.
- Buffaloforge;** post village in Rockbridge County on the Norfolk and Western Railway. Altitude, 752 feet.
- Buffalo Gap;** post village in Augusta County on the Chesapeake and Ohio Railway. Altitude, 1,882 feet.
- Buffalo Junction;** post village in Mecklenburg County on the Southern Railway.
- Buffalo Lithia Springs;** post village in Mecklenburg County on the Southern Railway.
- Buffalo Mills;** post village in Rockbridge County.
- Buffalo Ridge;** mountains in Amherst and Nelson counties. Elevation, 1,000 feet.
- Buffalo Ridge;** post village in Patrick County.
- Buffalo Springs;** station on James River in Nelson County on the Chesapeake and Ohio Railway.
- Buffalo Station;** post village in Nelson County.
- Bula;** post village in Goochland County.
- Bull;** creek, a small right-hand branch of Clinch River, rising in Wise County.
- Bull;** creek, a small left-hand branch of Levisa Fork, rising in Buchanan County.
- Bull;** run, a small right-hand tributary to Potomac River in Fairfax County.
- Bull;** run, a small right-hand tributary to Roanoke River in Franklin County.
- Bullbagger;** post village in Accomac County.
- Bull Pasture;** mountains in Highland County. Elevation, 2,500 to 3,000 feet.
- Bull Run;** mountains in Fauquier and Prince William counties. Elevation, 750 to 1,000 feet.
- Bullrun;** post village in Fairfax County.
- Bumpass;** post village in Louisa County on the Chesapeake and Ohio Railway.
- Bundick;** post village in Northumberland County.
- Bunkerhill;** post village in Bedford County.
- Bunker Hill;** summit in Franklin County.

- Burdens**; run, a small left-hand tributary to James River in Rockbridge County.
- Burger**; branch, a small left-hand tributary to Roanoke River in Campbell County.
- Burgess**; post village in Dinwiddie County on the Seaboard Air Line Railway.
- Burgess Store**; post village in Northumberland County.
- Burke Garden**; an elliptical valley drained by Wolf Creek into New River.
- Burkes Garden**; post village in Tazewell County on the Norfolk and Western Railway.
- Burkes Station**; post village in Fairfax County on the Southern Railway.
- Burketown**; post village in Augusta County.
- Burkeville**; town in Nottoway County. Population, 510.
- Burkfork**; post village in Floyd County.
- Burks**; fork, a small right-hand tributary to New River in Floyd and Carroll counties.
- Burks**; run, a small right-hand branch of New River in Pulaski County.
- Burnleys**; post village in Albemarle County on the Southern Railway.
- Burns**; creek, a small right-hand branch of Guest River in Wise County.
- Burns Knob**; summit in Rockingham County.
- Burnsville**; post village in Bath County.
- Burnt Chestnut**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.
- Burrhill**; post village in Orange County.
- Burrowsville**; post village in Prince George County.
- Burton**; creek, a small right-hand tributary to James River in Campbell County.
- Burton**; post village in King and Queen County on the Chesapeake and Ohio Railway.
- Burtons Creek**; post village in Campbell County.
- Burts**; post village in Sussex County.
- Burwellville**; village in Pittsylvania County.
- Bush**; small creek in Princess Anne County, emptying into Willoughby Bay.
- Bush**; post village in Brunswick County.
- Bush**; river, a small right-hand branch of Appomattox River in Prince Edward County.
- Bush Ford**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- Bushpark**; post village in Cumberland County.
- Bushy**; mountains in Wythe County. Elevation, 2,500 to 3,000 feet.
- Bushy**; post village in Middlesex County.
- Butcher**; creek, a small left-hand tributary to Powell River in Wise County.
- Butler**; mountain in Nelson County.
- Butt**; mountains in Giles County. Elevation, 2,500 to 4,195 feet.
- Butterwood**; creek, a small left-hand branch of Appomattox River in Powhatan County.
- Butterwood**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.
- Butterwood**; creek, a small left-hand tributary to Roanoke River in Charlotte County.
- Butterworth**; bridge in Dinwiddie County.
- Button**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Butylo**; post village in Middlesex County.
- Buzzard Boost**; summit in Lee County. Elevation, 3,000 feet.
- Byars**; creek, a small left-hand branch of Middle Holston River in Smyth County.
- Bybee**; post village in Fluvanna County.
- Byrd**; creek, a small left-hand branch of James River in Fluvanna County.
- Byrdton**; post village in Northumberland County.



- Byrdville**; post village in Pittsylvania County.
- Cabell**; village in Carroll County.
- Cabin**; post village in Grayson County.
- Cabin**; run, a small right-hand tributary to Shenandoah River in Warren County.
- Cabinpoint**; post village in Surry County.
- Cahas**; mountains in Franklin County. Elevation, 1,500 to 3,000 feet.
- Cahas Knob**; summit in Franklin County.
- Ca Ira**; post village in Cumberland County.
- Caldwell**; mountains in Botetourt County. Elevation, 1,500 to 2,500 feet.
- Caledonia**; post village in Goochland County.
- Calfee**; ford over New River in Pulaski County.
- Calf Pasture**; river, a small left-hand tributary to James River in Augusta and Rockbridge counties.
- Calicorock**; post village in Franklin County.
- Callaghan**; post village in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 428 feet.
- Callands**; post village in Pittsylvania County.
- Callao**; post village in Northumberland County.
- Callaville**; post village in Brunswick County.
- Callaway**; post village in Franklin County.
- Callihan**; creek, a small right-hand branch of Powell River in Wise County.
- Calno**; post village in King William County.
- Calvary**; post village in Shenandoah County.
- Calverton**; post village in Fauquier County on the Chesapeake and Ohio and the Southern railways.
- Cambria**; post village in Montgomery County.
- Camden**; creek, a small left-hand tributary to James River in Rockingham County.
- Camden**; gap in Amherst County between Richardson and Cedar mountains.
- Camel**; post village in Carroll County.
- Cameron**; post village in Scott County.
- Cameron**; run, a small right-hand branch of Potomac River in Fairfax County.
- Camm**; post village in Buckingham County.
- Camp**; post village in Smyth County.
- Camp**; branch, a small right-hand tributary to Jackson River in Craig County.
- Camp**; creek, a small right-hand tributary to Roanoke River in Floyd County.
- Camp**; small creek rising and sinking in Lee County.
- Camp**; creek, a small right-hand tributary to New River in Floyd County.
- Camp**; fork, a small right-hand tributary to New River in Carroll and Floyd counties.
- Camp**; mountain in Rockbridge County.
- Campbell**; branch, a small left-hand tributary to Clinch River, rising in Russell County.
- Campbell**; county, in the southern part of the State in the Piedmont region. Its surface is undulating and somewhat broken in the southern part by short ridges, outliers of the Blue Ridge. The southern part is drained by the Roanoke and the northern part by the James. The altitude ranges from a little less than 500 feet up to 1,500 feet. Area, 554 square miles. Population, 23,256—white, 13,641; negro, 9,615; foreign born, 136. County seat, Rustburg. The mean magnetic declination in 1900 was 2° 10'. The mean annual rainfall is 50 to 60 inches, and the temperature 55° to 60°. The county is traversed by the Southern and the Norfolk and Western railways.
- Campbell**; post village in Albemarle County on the Chesapeake and Ohio Railway.
- Campbells**; small left-hand branch of North Fork of Holston River in Smyth County.

**Campbells;** run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Campcreek;** post village in Floyd County.

**Camp Rock;** summit in Scott County. Elevation, 4,000 feet.

**Cana;** post village in Carroll County.

**Cane;** creek, a right-hand branch of Powell River in Lee County.

**Caney;** fork, a small right-hand branch of Clinch River, rising in Russell County.

**Cannon;** creek, a small left-hand tributary to James River in Henrico County.

**Canon;** post village in Carroll County.

**Canova;** post village in Prince William County.

**Canterburg;** post village in Frederick County.

**Cap;** post village in Carroll County.

**Cape Charles;** town in Northampton County on the New York, Philadelphia and Norfolk Railroad. Population, 1,040.

**Capeville;** post village in Northampton County.

**Capola;** mountain in Shenandoah County.

**Caponroad;** post village in Shenandoah County on the Baltimore and Ohio Railroad.

**Cappahosic;** post village in Gloucester County.

**Capron;** post village in Southampton County on the Southern Railway.

**Captain;** post village in Craig County.

**Card;** post village in Buchanan County.

**Cardinal;** post village in Mathews County.

**Cardinal;** summit in Amherst County.

**Cardwell;** post village in Goochland County.

**Caret;** post village in Essex County.

**Carlock;** creek, a small right-hand branch of Middle Fork of Holston River in Smyth County.

**Carloover;** post village in Bath County.

**Carltons Store;** post village in King and Queen County.

**Carmel;** post village in Shenandoah County.

**Carnation;** post village in King George County.

**Carne;** creek, a small right-hand tributary to James River in Alleghany County.

**Caroline;** county, situated in the central part of the State on the Atlantic plain. It has a rolling surface, and is but little elevated above sea level. Area, 562 square miles. Population, 16,709—white, 7,667; negro, 9,042; foreign born, 50. County seat, Bowling Green. The mean magnetic declination in 1900 was 3° 55'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Richmond, Fredericksburg and Potomac Railroad.

**Carrico;** post village in Culpeper County.

**Carrie;** post village in Dickenson County.

**Carroll;** county, situated in the southern part of the State. It is limited on the south by the summit of the Blue Ridge, on the west by New River, and on the north and east by arbitrary lines. Its surface is an elevated, undulated plateau, drained by many streams to New River. The altitude ranges from 2,000 to 3,600 feet above sea level. Area, 445 square miles. Population, 19,303—white, 18,964; negro, 339; foreign-born, 11. County seat, Hillsville. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.

**Carroll Sulphur;** springs in Carroll County.

**Carrollton;** post village in Isle of Wight County.

**Carrs;** mountain in Madison County. Elevation, 1,300 feet.

**Carrsville;** post village in Isle of Wight County on the Seaboard Air Line Railway.

- Carsley**; post village in Surry County.
- Carson**; post village in Prince George County.
- Carsonville**; post village in Grayson County.
- Carter**; ferry over Clinch River in Scott County.
- Carter**; mountains in Albemarle County. Elevation, 500 to 1,500 feet.
- Carter**; run, a small left-hand branch of Rappahannock River in Fauquier County.
- Carters Bridge**; post village in Albemarle County.
- Carters Island**; ford over Roanoke River in Bedford County.
- Carters Island**; post village in Bedford County.
- Carters Mills**; post village in Patrick County.
- Cartersville**; post-village in Cumberland County.
- Carters Wharf**; post village in Richmond County.
- Carterton**; post village in Russell County on the Norfolk and Western Railway.  
Altitude, 1,495 feet.
- Carthage**; post village in Floyd County.
- Cartmill**; gap in the northern part of Purgatory Mountains, caused by Purgatory Creek.
- Cartwrights Wharf**; post village in Nansemond County.
- Carvins**; cove in Tinker Mountains drained by Carvins Creek in Botetourt County.
- Carvins**; creek, a small left-hand tributary to Roanoke River in Botetourt County.
- Carysbrook**; post village in Fluvanna County.
- Casanova**; post village in Fauquier County on the Southern Railway.
- Cascade**; post village in Pittsylvania County on Danville and Western Railway.
- Casco**; post village in Hanover County.
- Cash**; post village in Gloucester County.
- Cashville**; post village in Accomac County.
- Caskie**; post village in Nelson County on the Chesapeake and Ohio Railway.
- Cassel**; post village in Patrick County.
- Castle Craig**; post village in Campbell County.
- Castleman**; ferry over Shenandoah River in Clarke County.
- Castlemans Ferry**; post village in Clarke County.
- Castle Rock**; summit in Albemarle County.
- Castleton**; post village in Rappahannock County.
- Castlewood**; post village in Russell County on the Norfolk and Western Railway.  
Altitude, 1,477 feet.
- Cast Steel**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Catalpa**; post village in Culpeper County.
- Catawba**; creek, a small right-hand tributary to James River in Roanoke County.
- Catawba**; creek, a small right-hand branch of James River in Botetourt County, formed by North and South forks.
- Catawba**; mountains in Roanoke County. Elevation, 2,000 to 2,906 feet.
- Catawba**; post village in Roanoke County.
- Catharines**; branch, a small left-hand tributary to North Fork of Holston River, rising in Washington County.
- Catharpin**; post village in Prince William County.
- Catharpin**; run, a small right-hand tributary to Mattaponi River in Spottsylvania County.
- Catharpin**; run, a small right-hand tributary to Potomac River in Prince William County.
- Cathay**; village in Augusta County.
- Catlett**; post village in Fauquier County on the Southern Railway.
- Catoctin**; creek, a small right-hand branch of Potomac River formed by two forks, North and South, in Loudoun County.
- Catoctin**; mountains in Loudoun County. Elevation, 500 feet.

- Catron**; post village in Wythe County.
- Cattail**; branch, a small right-hand tributary to James River in Dinwiddie County.
- Cattail**; run, a small right-hand tributary to Potomac River in Fauquier County.
- Cauthornville**; post village in King and Queen County.
- Cave**; mountain in Wythe County. Elevation, 2,500 feet.
- Cave Hill**; summit in Augusta County.
- Cave Spring**; branch, a small right-hand tributary to Roanoke River in Roanoke County.
- Cavespring**; post village in Roanoke County.
- Cavitt**; creek, a small right-hand branch of Clinch River, rising in Tazewell County.
- Caylor**; post village in Lee County.
- Cedar**; creek, a small left-hand tributary to Clinch River, rising in Russell County.
- Cedar**; creek, a small right-hand branch of James River in Rockbridge County.
- Cedar**; creek, a small left-hand tributary to James River in Bath County.
- Cedar**; creek, a small right-hand branch of Middle Holston River in Washington County.
- Cedar**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.
- Cedar**; creek, a small left-hand branch of Shenandoah River in Frederick and Warren counties.
- Cedar**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.
- Cedar**; mountain in Amherst County.
- Cedar**; run, a small left-hand tributary to New River in Wythe County.
- Cedar**; run, a small right-hand tributary to Potomac River in Prince William and Fauquier counties.
- Cedar**; run, a small right-hand tributary to Potomac River in Fauquier County.
- Cedar**; run, a small right-hand tributary to Rappahannock River in Culpeper County.
- Cedar**; run, a small left-hand tributary to Shenandoah River in Rockingham County.
- Cedar**; small island in Back Bay in Princess Anne County.
- Cedar**; small point of land in Isle of Wight County, extending into James River.
- Cedarbluff**; post village in Tazewell County on the Norfolk and Western Railway. Altitude, 1,988 feet.
- Cedar Forest**; post village in Pittsylvania County.
- Cedargrove**; post village in Frederick County.
- Cedar Ridge**; mountains in Botetourt County. Elevation, 1,500 feet.
- Cedar Springs**; post village in Wythe County.
- Cedarville**; post village in Warren County on the Norfolk and Western Railway. Altitude, 566 feet.
- Cedon**; post village in Caroline County.
- Cellar**; creek, a small right-hand tributary to Appomattox River in Nottoway County.
- Cellar**; mountain in Augusta County. Elevation, 2,500 feet.
- Centenary**; post village in Buckingham County.
- Centercross**; post village in Essex County.
- Center Mills**; post village in Montgomery County.
- Centerville**; post village in Fairfax County.
- Centralia**; post village in Chesterfield County.
- Central Lovely**; mountain in Pulaski County. Elevation, 1,785 feet.
- Centralplains**; post village in Fluvanna County.
- Centralpoint**; post village in Caroline County.
- Cephas**; post village in Mecklenburg County.
- Ceres**; post village in Bland County.

**Chaffin**; bluff in Henrico County.

**Chaffin**; post village in Halifax County.

**Chalk**; mountains in Albemarle County.

**Chalk**; run, a small left-hand tributary to James River in Rockbridge County.

**Chalklevel**; post village in Pittsylvania County.

**Chalk Mine**; mountain in Rockbridge County. Elevation, 2,960 feet.

**Chamberlains Bed**; small left-hand tributary to Nottoway River in Dinwiddie County.

**Chambersville**; post village in Frederick County.

**Chamblissburg**; post village in Bedford County.

**Champlain**; post village in Essex County.

**Chance**; post village in Essex County.

**Chandler**; mountain in Campbell County. Altitude, 1,405 feet.

**Chandler**; post village in Lee County.

**Chaney**; small right-hand branch of Cripple Creek in Wythe County.

**Chaney**; post village in Pittsylvania County.

**Chantilly**; post village in Fairfax County.

**Chap**; post village in Appomattox County.

**Charity**; post village in Patrick County.

**Charlemont**; post village in Bedford County, lying between the James and Appomattox rivers, just above their junction, but on the Atlantic plain. The surface is low and rolling, but little elevated above tide.

**Charles**; cape, point of land in Northampton County, the northern point at the entrance to Chesapeake Bay.

**Charles City**; county, situated in the eastern part of the State. Area 183 square miles. Population, 5,040—white, 1,344; negro, 3,696; foreign born, 15. County seat, Charles City. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**Charles City**; county seat of Charles City County.

**Charlie Hope**; post village in Brunswick County.

**Charlotte**; county, situated in the southern part of the State in the Piedmont region. Its surface presents but little relief, ranging from 300 to 500 feet above sea level. Area 479 square miles. Population, 15,343—white, 6,798; negro, 8,545; foreign born, 37. County seat, Charlotte. The mean magnetic declination in 1900 was  $2^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern Railway.

**Charlotte**; county seat of Charlotte County.

**Charlottesville**; city, located in Albemarle County on the Chesapeake and Ohio and the Southern railways. It is independent in government, and has a population of 6,449. It contains the court-house.

**Chase**; village in Mecklenburg County on the Southern Railway. Population, 542.

**Chase Wharf**; post village in Lancaster County.

**Chatham**; county seat of Pittsylvania County on the Southern Railway. Altitude, 624 feet. Population, 918.

**Chatham Hill**; post village in Smyth County.

**Chatmoss**; post village in Henry County on the Danville and Western Railway.

**Chatterton**; post village in King George County.

**Cheapside**; post village in Northampton County.

**Cheatwood**; post village in Appomattox County.

**Check**; post village in Floyd County.

**Cheese**; creek, a small, left-hand tributary to Roanoke River in Campbell County.

**Chells**; ford over Roanoke River in Pittsylvania County.

**Cherriton**; post village in Northampton County.

**Cherry**; village in Norfolk County.

**Cherrydale**; post village in Alexandria County.

**Cherrygrove**; post village in Rockingham County.

**Cherrystone**; post village in Northampton County.

**Chesapeake**; largest bay on the Atlantic coast. It stretches northward from Capes Charles and Henry at its entrance for 175 miles, with an average breadth of from 25 to 30 miles, and is navigable to its head by vessels of considerable draft. It penetrates the States of Virginia and Maryland. Into it flow many rivers, especially from the west, the largest of which are the Potomac, Rappahannock, York, and James. Upon its west are the important cities of Baltimore, Newport News, and Norfolk.

**Chesapeake**; post village in Northampton County.

**Chesconnessex**; post village in Accomac County.

**Chester**; gap in the Blue Ridge. Altitude, 1,320 feet.

**Chester**; post village in Chesterfield County, on the Atlantic Coast Line, the Farmville and Powhatan, and the Seaboard Air Line railroads.

**Chesterbrook**; post village in Fairfax County.

**Chesterfield**; county, situated in the central part of the State in the Piedmont region, the boundary upon the north being in part the Appomattox River. The surface is undulating or rolling, elevated 200 or 300 feet above sea level. Area, 484 square miles. Population, 18,804—white, 11,105; negro, 7,699; foreign born, 361. County seat, Chesterfield. The mean magnetic declination in 1900 was 3° 30'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Atlantic Coast Line, the Seaboard Air Line, the Farmville and Powhatan, and the Southern railroads.

**Chesterfield**; county seat of Chesterfield County.

**Chestnut**; creek, a right-hand branch of New River in Carroll County.

**Chestnut**; creek, a right-hand tributary to Roanoke River in Franklin County.

**Chestnut**; post village in Amherst County.

**Chestnutfork**; post village in Bedford County.

**Chestnut Level**; summit in Alleghany Front, in Bath County.

**Chestnut Lick**; small right-hand tributary to Potomac River in Prince William County.

**Chestnut Mountain**; summit in Botetourt County. Elevation, 2,000 to 2,500 feet.

**Chestnut Ridge**; mountains in Amherst County. Elevation, 2,000 to 3,000 feet.

**Chestnut Ridge**; mountains in Augusta County.

**Chestnut Ridge**; mountains in Bath County. Elevation, 2,000 to 3,000 feet.

**Chestnut Ridge**; mountains in Bland County.

**Chestnut Ridge**; mountains in Rockingham County. Elevation, 1,500 feet.

**Chestnut Ridge**; mountains in Scott County.

**Chestnut Ridge**; mountains in Smyth and Wythe counties. Elevation, 2,500 feet.

**Chestnut Ridge**; mountains in Tazewell and Bland counties. Elevation, 3,000 to 4,000 feet.

**Chestnut Ridge**; mountains in Washington County.

**Chestnut Ridge**; summit in Rockingham County.

**Chickahominy**; river, heading in the eastern edge of the Piedmont region and flowing southeast, joining James River a short distance above its mouth.

**Childress**; post village in Montgomery County.

**Chilesburg**; post village in Caroline County.

**Chilhowie**; small right-hand branch of Middle Fork of Holston River in Smyth County.

**Chilhowie**; post village in Smyth County on the Norfolk and Western Railway.

**Chiltons**; post village in Westmoreland County.

**Chimney**; branch, a small right-hand tributary to New River in Pulaski County.

- Chimney**; run, a small left-hand tributary to James River in Bath County.
- Chimney Rock**; fork, a small right-hand tributary to Clinch River in Scott County.
- Chincoteague Island**; post village in Accomac County.
- Chisel Knob**; summit in Carroll County. Elevation, 3,663.
- Chisleys**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Chopawamsic**; creek, a small right-hand branch of Potomac River in Prince William and Stafford counties.
- Chrisman**; post village in Rockingham County.
- Christian**; creek, a small tributary to Shenandoah River in Augusta County.
- Christiansburg**; county seat of Montgomery County on the Norfolk and Western Railway. Altitude, 2,007 feet. Population, 659.
- Christie**; post village in Halifax County on the Southern Railway.
- Christopher**; creek, a small left-hand tributary to York River in Louisa County.
- Chub**, post village in Sussex County.
- Chuckatuck**; post village in Nansemond County.
- Chuckatuck Island**; small creek emptying into James River in Nansemond County.
- Chula Depot**; post village in Amelia County on the Southern Railway.
- Chum**; post village in Carroll County.
- Church**; small right-hand branch of Slat Creek in Buchanan County.
- Church**; ford in Clinch River in Scott County.
- Church**; run, a small right-hand tributary to York River in Orange County.
- Churchland**; post village in Norfolk County on the Atlantic Coast Line Railroad.
- Church Road**; post village in Dinwiddie County on the Norfolk and Western Railway.
- Church Rock**; summit in North Mountain.
- Church View**; post village in Middlesex County.
- Churchville**; post village in Augusta County.
- Churchwood**; post village in Pulaski County.
- Cifax**; post village in Bedford County.
- Cisco**; post village in Mecklenburg County.
- Cismont**; post village in Albemarle County.
- Citypoint**; post village in Prince George County on the Norfolk and Western Railway.
- Claiborne**; post village in Amherst County.
- Claudville**; post village in Patrick County.
- Clapboard**; creek, a small right-hand branch of New River in Pulaski County.
- Clare**; post village in Augusta County.
- Claremont**; village in Surry County on the Southern Railway. Population, 565.
- Claresville**; post village in Greenville County.
- Clark**; mountains in Orange County. Elevation, 500 to 1,000 feet.
- Clarke**; county, situated in the northern part of the State in the Shenandoah Valley, the eastern boundary being the crest of the Blue Ridge. The surface is mainly level, but in the eastern part are the heavy spurs of the Blue Ridge. Area, 189 square miles. Population, 7,927—whites, 5,695; negro, 2,231; foreign born, 29. County seat, Berryville. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.
- Clarks**; creek, a small left-hand tributary to Yadkin River in Patrick County.
- Clarks Gap**; post village in Loudoun County on the Southern Railway. Altitude, 578 feet.
- Clarks**; creek, a small left-hand tributary to James River in Amherst County.
- Clarkson**; post village in Culpeper County.
- Clarksville**; town in Mecklenburg County on the Southern Railway. Population,

- Clarkton**; post village in Halifax County on the Norfolk and Western Railway.
- Clary**; post village in Shenandoah County.
- Claudville**; post village in Patrick County.
- Clay**; small right-hand branch of Roanoke River in Pittsylvania County.
- Claybank**; post village in Gloucester County.
- Clayce**; post village in Floyd County.
- Claypool**; post village in Nelson County.
- Clays Mills**; post village in Halifax County.
- Clayville**; post village in Powhatan County on the Southern Railway.
- Clear**; creek, a small right-hand branch of New River in Wythe and Carroll counties.
- Clear**; creek, a small right-hand branch of Great River in Wise County.
- Clear**; creek, a small right-hand tributary to Beaver Creek, rising in Washington County.
- Clear**; fork, a tributary to Wolf Creek, rising in Tazewell County.
- Clear**; fork, a small right-hand branch of New River in Grayson County.
- Clearbrook**; post village in Frederick County on the Cumberland Valley Railroad.
- Clearfork**; post village in Bland County.
- Cleave Knob**; mountains in Wythe County. Elevation, 2,500 feet.
- Cleghorn**; valley in Smyth County.
- Clems Branch**; post village in Grayson County.
- Clendening**; creek, a small right-hand branch of New River in Giles County.
- Cleopus**; post village in Nansemond County.
- Cleveland**; post village in Russell County on the Norfolk and Western Railway. Altitude, 1,425 feet.
- Clevilas**; post village in Bedford County.
- Clide**; village in Russell County.
- Cliff Mills**; post village in Fauquier County.
- Clifford**; post village in Amherst County.
- Clift**; post village in Alleghany County.
- Clifton Forge**; town in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 1,052 feet. Population, 3,212.
- Clifton Station**; post village in Fairfax County on the Southern Railway.
- Clinch**; mountain ridge extending from Grainger County, Tenn., to Tazewell County, Va. Maximum height, 4,274 feet.
- Clinch**; post village in Scott County.
- Clinch**; river, rising in Tazewell County, Va., flowing southwest into Kingston County, Tenn., and discharging into Tennessee River.
- Clinchport**; town in Scott County, on the Virginia and Southwestern Railway. Population, 183.
- Clinton**; post village in Cumberland County.
- Clintwood**; county seat of Dickenson County. Population, 255.
- Clio**; post village in Floyd County.
- Clip**; village in Washington County.
- Clito**; post village in Grayson County.
- Clover**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Clover**; hollow, a small right-hand tributary to New River in Craig and Giles counties.
- Clover**; town in Halifax County on the Southern Railway. Population, 400.
- Clovercreek**; post village in Highland County.
- Cloverdale**; post village in Botetourt County on the Norfolk and Western Railway. Altitude, 1,122 feet.
- Cloyds**; mountains in Pulaski County. Elevation, 2,000 to 2,500 feet.
- Clung**; post village in Carroll County.
- Coakley**; post village in Stafford County.



- Coal**; creek, a small right-hand branch of Clinch River in Tazewell County.  
**Coal**; run, a small right-hand tributary to Bluestone River in Tazewell County.  
**Coal**; run, a small left-hand tributary to Shenandoah River in Augusta County.  
**Coalcreek**; post village in Carroll County.  
**Coal Hill**; post village in Henrico County.  
**Coan**; post village in Northumberland County.  
**Coates**; post village in Louisa County.  
**Cobbler**; mountains in Bath County.  
**Cobbs Creek**; post village in Mathews County.  
**Cobbs Mount**; summit in Bedford County. Elevation, 1,410 feet.  
**Cobham**; post village in Albemarle County on the Chesapeake and Ohio Railway.  
**Coby Knob**; summit in Grayson County.  
**Cochran**; post village in Brunswick County on the Seaboard Air Line Railway.  
**Cockpit**; point on Potomac River in Prince William County.  
**Coddyshore**; post village in Sussex County.  
**Cody**; post village in Halifax County.  
**Coeburn**; town in Wise County on the Norfolk and Western Railway. Altitude, 1,982 feet. Population, 295.  
**Coffee**; creek, a small left-hand tributary to James River in Amherst County.  
**Coffee**; post village in Bedford County.  
**Cohoke**; post village in King William County.  
**Coke**; post village in Gloucester County.  
**Coldharbor**; village in Hanover County.  
**Cold Sulphur Springs**; post village in Rockbridge County.  
**Cole**; creek, a small right-hand tributary to New River in Carroll County.  
**Colemans Falls**; post village in Bedford County on the Chesapeake and Ohio Railway.  
**Cole Mountain**; summit in Amherst County.  
**Coles**; creek, a small right-hand tributary to Roanoke River in Franklin County.  
**Coles Ferry**; post village in Charlotte County.  
**Coles Knob**; summit in Floyd County. Elevation, 2,903 feet.  
**Coles Knob**; summit in Franklin County.  
**Coles Point**; post village in Westmoreland County.  
**Colesville**; post village in Patrick County.  
**Colina**; post village in Dinwiddie County.  
**Colleen**; post village in Nelson County.  
**College Park**; post village in Campbell County.  
**Colley**; post village in Dickenson County.  
**Collier**; creek, a small right-hand tributary to James River in Rockbridge County.  
**Colliertown**; post village in Rockbridge County.  
**Collins Mill**; post village in Grayson County.  
**Collinsville**; post village in Frederick County.  
**Collison Ridge**; mountains in Bath County. Elevation, 2,000 to 2,500 feet.  
**Cologne**; post village in King and Queen County.  
**Colonial Beach**; town in Westmoreland County. Population, 453.  
**Colosse**; post village in Isle of Wight County.  
**Columbia**; town in Fluvanna County on the Chesapeake and Ohio Railway. Population, 216.  
**Columbia Furnace**; post village in Shenandoah County.  
**Columbian Grove**; post village in Lunenburg County.  
**Colvin Run**; post village in Fairfax County.  
**Comans Well**; post village in Sussex County.  
**Comb Point**; summit in Russell County. Elevation, 2,000 feet.  
**Comer Rock**; summit in Iron Mountains. Elevation, 4,113 feet.

- Comers Rock**; post village in Grayson County.  
**Comet**; post village in Isle of Wight County.  
**Comfort**; post village in Lee County.  
**Como**; village in Henry County.  
**Comorn**; post village in King George County.  
**Compton**; post village in Page County on the Norfolk and Western Railway.  
**Concord Depot**; post village in Campbell County on the Norfolk and Western Railway. Altitude, 833 feet.  
**Cone**; mountains in Nelson County.  
**Conicville**; post village in Shenandoah County.  
**Conklin**; post village in Loudoun County.  
**Conley**; post village in Southampton County.  
**Conrad**; ferry across Potomac River in Loudoun County.  
**Conrads Mills**; post village in Middlesex County.  
**Consent**; post village in Patrick County.  
**Contra**; post village in King and Queen County.  
**Contrary**; creek, a small left-hand tributary to York River in Louisa County.  
**Contrary**; creek, a small right-hand branch of Levisa Fork in Buchanan County.  
**Converse**; post village in Norfolk County.  
**Conway**; river, a small right-hand tributary to Rappahannock River in Greene County.  
**Cook**; post village in Carroll County.  
**Cooks**; creek, a small left-hand tributary to York River in Orange County.  
**Cooks**; run, a small left-hand tributary to South Fork of Roanoke River in Montgomery County.  
**Coolwell**; post village in Amherst County.  
**Coonseye**; post village in Wise County.  
**Coonsville**; post village in Bedford County.  
**Cooper**; post village in Middlesex County.  
**Cootes Store**; post village in Rockingham County.  
**Copeland**; post village in Nansemond County on the Southern Railway.  
**Copper**; creek, a small left-hand tributary to Clinch River, rising in Russell County.  
**Copper**; ridge, in Russell and Scott counties, extending northeast and southwest. Elevation, 2,000 to 2,500 feet.  
**Copperhill**; post village in Floyd County.  
**Copper Valley**; post village in Floyd County.  
**Corbet**; post village in Scott County.  
**Corbin**; post village in Caroline County.  
**Cordova**; post village in Culpeper County.  
**Corinth**; post village in Wythe County.  
**Corleyville**; post village in Roanoke County.  
**Cornland**; post village in Norfolk County.  
**Cornsville**; post village in Scott County.  
**Cornwall**; post village in Rockbridge County on the Norfolk and Western Railway.  
**Cosby**; post village in Orange County.  
**Cotman**; post village in Henrico County.  
**Cotopaxi**; post village in Augusta County on the Norfolk and Western Railway.  
**Coulson**; post village in Carroll County.  
**Council**; post village in Buchanan County.  
**Counts**; village in Russell County.  
**Co rt House**; creek, a small left-hand tributary to James River in Goochland County.  
**Courtland**; county seat of Southampton County on the Southern Railway. Population, 288.

**Cove;** creek, a small left-hand branch of Cripple Creek in Wythe County.

**Cove;** creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Cove;** creek, a small left-hand tributary to James River in Albemarle and Nelson counties.

**Cove;** creek, a small right-hand branch of Clinch River in Scott County.

**Cove;** creek, a small right-hand branch of North Fork of Holston River in Smyth County.

**Cove;** creek, a small right-hand tributary to Jackson River in Alleghany County.

**Cove;** creek, a small right-hand tributary to Wolf Creek in Tazewell County.

**Cove;** mountains in Craig and Roanoke counties. Elevation, 2,500 to 3,000 feet.

**Cove;** run, a small right-hand tributary to Jackson River in Alleghany County.

**Cove;** run, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Covecreek;** post village in Tazewell County.

**Cove Mountain;** summit in Rockingham County. Elevation, 2,000 feet.

**Cove Ridge;** mountains in Scott County. Elevation, 2,000 feet.

**Covesville;** post village in Albemarle County on the Southern Railway. Altitude, 804 feet.

**Coveton;** post village in Wythe County.

**Covington;** river, a small right-hand tributary to Rappahannock River in Rappahannock County.

**Covington;** county seat of Alleghany County on the Chesapeake and Ohio Railway. Population, 2,950. Altitude, 1,245 feet.

**Cowan;** small branch of Sinking Creek in Scott County.

**Cowan;** small right-hand branch of Opossum Creek in Scott County.

**Cowans Depot;** post village in Rockingham County.

**Cowans Mills;** post village in Montgomery County.

**Cowardin;** post village in Bath County.

**Cowardin;** run, a small left-hand tributary to James River in Bath County.

**Cowart;** post village in Northumberland County.

**Cowpasture;** river, a small left-hand branch of James River in Bath County.

**Cowpasture;** river, a left-hand tributary to James River in Highland County.

**Cox;** small right-hand branch of North Fork of Clinch River in Scott County.

**Cox;** creek, a small left-hand branch of North Fork of Holston River in Smyth County.

**Cox;** creek, a small right-hand tributary to North Fork of Powell River.

**Cox;** ferry across New River in Pulaski County.

**Cox;** ford over New River.

**Cox;** post village in Lee County.

**Cox Knob;** summit in Botetourt County. Elevation, 3,525 feet.

**Coyners;** mountain in Botetourt County. Elevation, 1,500 feet.

**Coyners Springs;** post village in Botetourt County.

**Crab;** creek, a small right-hand branch of New River in Pulaski County.

**Crab;** creek, a small right-hand tributary to New River in Grayson County.

**Crab;** post village in Gloucester County.

**Crab;** run, a small left-hand tributary to James River in Highland County.

**Crabbottom;** post village in Highland County.

**Crabneck;** post village in York County.

**Crab Orchard;** creek, a small right-hand tributary to Walker Creek, rising in Bland County.

**Crab Orchard;** creek, small right-hand branch of North Fork of Powell River.

**Crab Orchard;** creek, a small left-hand tributary to Roanoke River in Bedford County.

**Crab Orchard;** post village in Lee County.

- Crabtree**; falls in a branch of South Fork of Tye River in Nelson County.
- Craddock**; creek, a small left-hand branch of Roanoke River in Bedford County.
- Craddockville**; post village in Accomac County.
- Craft**; ferry over Clinch River in Scott County.
- Crafts**; ford in Blackwater River in Franklin County.
- Cragged**; branch, a small left-hand tributary to Roanoke River in Bedford County.
- Craig**; county, situated in the western part of the State in the Appalachian Valley. Area, 351 square miles. Its surface consists of an alternation of parallel ridges, trending northeast and southwest, separated by limestone valleys, and is drained by branches of James River. The altitude ranges from 1,200 to 3,600 feet above sea level. Population, 4,293—white, 4,032; negro, 261; foreign born, 9. County seat, Newcastle. The mean magnetic declination in 1900 was  $1^{\circ} 10'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.
- Craig**; creek, a right-hand tributary to Jackson River in Craig County.
- Craig**; creek, a right-hand tributary to James River in Craig and Montgomery counties.
- Craig City**; post village in Craig County.
- Craig Healing**; springs in Craig County.
- Craigs Creek**; post village in Craig County.
- Craigs Mills**; village in Washington County.
- Craigsville**; post village in Augusta County on the Chesapeake and Ohio Railway. Altitude, 1,515 feet.
- Cranberry**; creek, a small right-hand tributary to New River in Carroll County.
- Crandon**; post village in Bland County.
- Cranes Nest**; creek, a small left-hand tributary to Russell Fork, rising in Dickenson County.
- Cranes Nest**; post village in Wise County.
- Craney**; island in Elizabeth River.
- Craney**; island in James River in Norfolk County.
- Crank**; post village in Louisa County on the Chesapeake and Ohio Railway.
- Crawford**; gap in Tobacco Row Mountain in Amherst County.
- Crawford**; mountains in Augusta County. Elevation, 2,500 to 3,500 feet.
- Crawford Draft**; small tributary to Shenandoah River in Augusta County.
- Crawford Ridge**; mountains in Montgomery and Roanoke counties.
- Crayon**; post village in Mecklenburg County.
- Creeds**; post village in Princess Anne County.
- Cremona**; post village in Cumberland County.
- Creola**; post village in Grayson County.
- Cressy**; creek, a small left-hand branch of South Fork of Holston River in Smyth County.
- Crest**; post village in Stafford County.
- Creswell**; village in Russell County.
- Crewe**; town in Nottoway County on the Norfolk and Western Railway. Population, 1,329.
- Crichton**; post village in Brunswick County.
- Cricket Hill**; post village in Mathews County.
- Criders**; post village in Rockingham County.
- Criglersville**; post village in Madison County.
- Crimora Station**; post village in Augusta County on the Norfolk and Western Railway. Altitude, 1,239 feet.
- Cripple**; creek, a left-hand branch of New River in Wythe County.
- Cripple**; creek, a right-hand branch of New River, rising in Smyth County.
- Cripple Creek**; post village in Wythe County on the Norfolk and Western Railway.

- Crittenden**; post village in Nansemond County.
- Critz**; post village in Patrick County on the Danville and Western Railway.
- Croaker**; post village in James City County.
- Crockett**; cove in Big Stone Ridge in Tazewell County.
- Crockett Depot**; post village in Wythe County on the Norfolk and Western Railway. Altitude, 2,327 feet.
- Crockett Springs**; post village in Montgomery County.
- Crofton**; post village in Fluvanna County.
- Cromwells**; run, a small right-hand tributary to Potomac River in Fauquier County.
- Crooked**; branch, a small right-hand tributary to James River in Chesterfield County.
- Crooked**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.
- Crooked**; creek, a right-hand branch of New River in Carroll County.
- Crooked**; run, a small right-hand branch of Potomac River in Fauquier County.
- Crooked**; run, a small right-hand tributary to James River in Botetourt County.
- Crooked**; run, a small right-hand tributary to Roanoke River in Franklin County.
- Crooked**; run, a small right-hand tributary to Rappahannock River bordering on Culpeper and Madison counties.
- Crookedrun**; post village in Culpeper County.
- Crosby**; post village in Campbell County.
- Cross Junction**; post village in Frederick County.
- Crosskeys**; post village in Rockingham County.
- Crossroads**; post village in Halifax County.
- Crouch**; post village in King and Queen County.
- Crow**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Crowell**; gap, in the Blue Ridge in Franklin County.
- Crowspring**; village in Chesterfield County.
- Croxton**; post village in Caroline County.
- Grozet**; post village in Albemarle County on the Chesapeake and Ohio Railway. Altitude, 718 feet.
- Cruise**; post village in Patrick County.
- Crump**; creek, a small right-hand branch of Pamunkey River in Hanover County.
- Crump**; post village in Amelia County.
- Crums**; post village in Clarke County.
- Crush**; run, a small right-hand tributary to James River in Botetourt County.
- Crystal**; post village in Bedford County.
- Crystalhill**; post village in Halifax County on the Norfolk and Western Railway. Altitude, 547 feet.
- Cub**; creek, a small left-hand tributary to Roanoke River in Appomattox and Charlotte counties.
- Cub**; creek, a small right-hand tributary to York River in Louisa County.
- Cub**; run, a small left-hand branch of Shenandoah River in Rockingham County.
- Cub**; run, a small left-hand tributary to James River in Nelson County.
- Cub**; run, a small right-hand tributary to Potomac River in Fairfax County.
- Cub**; run, a small right-hand tributary to Shenandoah River in Page County.
- Cubcreek**; post village in Charlotte County.
- Cuckoo**; post village in Louisa County.
- Culpeper**; county, situated in the eastern part of the State in the Piedmont region. It has a rolling surface, broken here and there by short ridges. The altitude is only a few hundred feet above the sea. Area, 399 square miles. Population, 14,123—white, 8,069; negro, 6,053; foreign born, 59. County seat, Culpeper. The mean magnetic declination in 1900 was 3° 55'. The mean annual rainfall is 40 to 50 inches, and the temperature 50° to 60°. The county is traversed by the Chesapeake and Ohio and the Southern railways.

**Culpeper**; county seat of Culpeper County on the Chesapeake and Ohio and the Southern railways. Population, 1,618.

**Cumberland**; county, situated in the central part of the State in the Piedmont region. It is drained by James River, which flows along its southern boundary. Willis River, a branch of the James, crosses it from southwest to northeast. Altitude, 200 to 500 feet. Area, 297 square miles. Population, 8,996—white, 2,791; negro, 6,205; foreign born, 16. County seat, Cumberland. The mean magnetic declination in 1900 was 3° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature is 55° to 60°. The county is traversed by the Farmville and Powhatan and the Norfolk and Western railroads.

**Cumberland**; county seat of Cumberland County on the Farmville and Powhatan Railroad.

**Cumberland**; gap in the Cumberland Mountains at the southwestern corner of State. Altitude, 1,600 feet.

**Cumberland**; mountains in the southwestern part of Lee County, forming the boundary line between Kentucky and Virginia. Elevation, 2,500 to 3,000 feet.

**Cumbow**; village in Lee County.

**Cumnor**; post village in King and Queen County.

**Cunningham**; creek, a small left-hand tributary to James River in Fluvanna County.

**Cunningham**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Curdsville**; post village in Buckingham County.

**Curles**; neck of land formed by a bend in the James River in Henrico County.

**Curlew**; post village in Spottsylvania County.

**Currin**; post village in Montgomery County.

**Curtis**; post village in Bedford County.

**Curve**; post village in Giles County on the Norfolk and Western Railway.

**Cuscowilla**; post village in Mecklenburg County.

**Cutalong**; post village in Louisa County.

**Cut Banks**; ford across Appomattox River in Buckingham County.

**Cutler**; post village in Caroline County.

**Cuzco**; post village in Louisa County.

**Cynthia**; village in Lee County.

**Cypress Chapel**; post village in Nansemond County.

**Dabneys**; post village in Louisa County.

**Daggers**; post village in Botetourt County.

**Dahlia**; post village in Greenvsille County.

**Daisy**; post village in King and Queen County.

**Dalbys**; post village in Northampton County.

**Dale**; mountain in Rockbridge County.

**Dale Enterprise**; post village in Rockingham County. Altitude, 1,350 feet.

**Daleville**; post village in Botetourt County.

**Dalzell**; post village in Campbell County.

**Damascus**; post village in Washington County.

**Damon**; post village in Albemarle County.

**Dan**; small right-hand branch of Knox Creek in Buchanan County.

**Dan**; river of North Carolina and Virginia, one of the two main branches of Roanoke River. It heads in northwestern North Carolina and flows in a generally north-east course to its junction with the Roanoke in Halifax County, Va.; mean discharge, 3,026 cubic feet per second. It is navigable to Madison, N. C.

**Daniels**; run, a small left-hand tributary to Staunton River in Franklin County.

**Danieltown**; post village in Brunswick County.

**Danripple**; post village in Halifax County.

- Danton**; post village in Orange County.
- Danville**; city, independent in government, located on Dan River in Pittsylvania County on the Danville and Western and the Southern railways. Population, 16,520.
- Darden**; post village in Isle of Wight County.
- Dark**; run, a small right-hand branch of Roanoke River in Montgomery County.
- Darlington Heights**; post village in Prince Edward County.
- Dartha**; post village in Wise County.
- Darvills**; post village in Dinwiddie County.
- Darwin**; post village in Dickenson County.
- Dash**; post village in New Kent County.
- Daugherty**; post village in Accomac County.
- Davenport**; post village in Buchanan County.
- David**; creek, a small right-hand branch of James River in Appomattox and Buckingham counties.
- Davids**; run, a small right-hand tributary to James River in Botetourt County.
- Davis**; branch, a small left-hand tributary to James River in Amherst County.
- Davis**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.
- Davis Knob**; summit in Grayson County. Elevation, 3,020.
- Davis Mills**; post village in Bedford County.
- Davis Wharf**; post village in Accomac County.
- Dawn**; post village in Caroline County.
- Dawson**; creek, a small right-hand branch of Appomattox River in Amelia County.
- Dawson**; summit in Nelson County.
- Dawsonville**; post village in Greene County.
- Daysville**; post village in Loudoun County.
- Dayton**; town in Rockingham County on the Chesapeake and Western Railway. Population, 425.
- Dean**; creek, a small right-hand branch of New River, rising in Wythe County.
- Deane**; post village in Nansemond County on the Norfolk and Carolina Railroad.
- Dearborn**; post village in Amherst County.
- Deatonsville**; post village in Amelia County.
- Debusk**; post village in Dickenson County.
- De Bust**; ford of Powell River in Lee County.
- Deep**; creek, a left-hand tributary to Elizabeth River in Norfolk County.
- Deep**; creek, a small left-hand tributary to Appomattox River in Chesterfield County.
- Deep**; creek, a small right-hand tributary to Appomattox River in Nottoway County.
- Deep**; creek, a small right-hand branch of Appomattox River in Amelia County.
- Deep**; creek, a small right-hand branch of James River in Powhatan County.
- Deep**; creek, a small right-hand tributary to York River in Louisa County.
- Deep**; run, a small left-hand branch of Rappahannock River in Fauquier and Stafford counties.
- Deep**; run, a small left-hand tributary to James River in Henrico County.
- Deep**; run, a small right-hand tributary to Rappahannock River in Madison County.
- Deep**; run, a small right-hand branch of the Rappahannock River in Spotsylvania County.
- Deep**; run, a small right-hand branch of Shenandoah River in Rockingham County.
- Deepcreek**; post village in Norfolk County.
- Deep Water**; creek, a small right-hand tributary to New River in Floyd and Carroll counties.
- Deep Water**; fork, small left-hand tributary to New River in Carroll County.

- Deerfield**; post village in Augusta County.  
**Deer Head**; summit in Shenandoah County.  
**Deerrock**; post village in Nelson County.  
**Deerwood**; ford across Roanoke River in Pittsylvania County.  
**Dehaven**; post village in Frederick County.  
**Dejarnette**; post village in Caroline County.  
**Delaplane**; post village in Fauquier County on the Southern Railway.  
**Delaware**; post village in Southampton County on the Seaboard Air Line Railway.  
**Delay**; post village in Bedford County.  
**Delclisur**; post village in Lee County.  
**Delila**; post village in Halifax County.  
**Dell**; post village in Grayson County.  
**Delos**; post village in Caroline County.  
**Delton**; post village in Pulaski County on the Norfolk and Western Railway.  
**Democrat**; post village in Lee County.  
**Demonet**; post village in Clarke County.  
**Denaro**; post village in Amelia County.  
**Denbigh**; county seat of Warwick County.  
**Dendron**; post village in Surry County on the Surry, Sussex and Southampton Railway.  
**Denmark**; post village in Rockbridge County.  
**Denniston**; post village in Halifax County on the Norfolk and Western and the Southern railways.  
**Denton Valley**; creek, a small left-hand branch of South Fork of Holston River in Washington County.  
**Derby**; post village in Prince George County.  
**Desert**; sand desert along the eastern coast of Princess Anne County.  
**Desha**; post village in Essex County.  
**Design**; village in Pittsylvania County.  
**Deakin**; mountains in Tazewell County. Elevation, 2,500 feet.  
**Deskens**; post village in Buchanan County.  
**Detrick**; post village in Shenandoah County.  
**Devil**; fork, a small right-hand tributary to Clinch River in Scott County.  
**Devils**; creek, a small left-hand branch of Knox Creek, rising in Buchanan County.  
**Devils Hole**; mountains in Shenandoah County.  
**Devils Knob**; summit in the Blue Ridge in Nelson County.  
**Dew**; post village in Middlesex County.  
**Dewey**; post village in Wise County.  
**Dewitt**; post village in Dinwiddie County on the Seaboard Air Line Railway.  
**Dexter**; post village in Russell County.  
**Dial Rock**; summit in Buckhorn Mountains.  
**Diamondgrove**; post village in Brunswick County.  
**Diana Mills**; post village in Buckingham County.  
**Diascond**; post village in James City County on the Chesapeake and Ohio Railway.  
**Dick**; branch, a small right-hand tributary to Potomac River in Prince William County.  
**Dick**; creek, a small tributary to Dry Fork in Tazewell County.  
**Dicken**; branch, a small right-hand tributary to New River in Carroll County.  
**Dickens**; post village in Goochland County.  
**Dickensonville**; village in Russell County.  
**Dickerson**; ford of Powell River in Lee County.  
**Dickey**; creek, a small left-hand branch of South Fork of Holston River in Smyth County.  
**Dickey**; hill in Warren County. Elevation, 1,500 to 2,000 feet.



- Dickenson**; county, located in the western part of the State in the Alleghany Plateau, here deeply dissected. It is drained by Russell Fork of Big Sandy River. The altitude ranges from 1,000 to 3,000 feet above sea level. Area, 297 square miles. Population, 7,747—all white. County seat, Clintwood. The mean magnetic declination in 1900 was 15'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°.
- Dickinson**; post village in Franklin County on the Chesapeake and Ohio Railway.
- Dicks**; creek, a small right-hand tributary to James River in Craig County.
- Dido**; post village in King George County.
- Difficult**; run, a small right-hand branch of Potomac River in Fairfax County.
- Difficult**; run, a small left-hand tributary to Roanoke River in Bedford County.
- Difficult**; village in Fairfax County.
- Diggs**; post village in Mathews County.
- Dilbeck**; post village in Shenandoah County.
- Dillon**; village in Henry County on the Chesapeake and Ohio Railway.
- Dillons Mills**, post village in Franklin County.
- Dillwyn**; post village in Buckingham County on the Chesapeake and Ohio Railway. Altitude, 645 feet.
- Dingley**; post village in Northampton County.
- Dinguid**; post village in Campbell County.
- Dinwiddie**; county, situated in the central part of the State in the Piedmont region, the boundary on the north being in part the Appomattox River. The surface is undulating or rolling. Elevation, 200 or 300 feet above sea level. Area, 521 square miles. Population, 15,374—white, 5,874; negro, 9,500; foreign born, 119. County seat, Dinwiddie. The mean magnetic declination in 1900 was 3° 20'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Seaboard Air Line, the Atlantic Coast Line, and the Norfolk and Western railroads.
- Dinwiddie**; county seat of Dinwiddie County on the Seaboard Air Line Railway.
- Dipsey**; post village in Carroll County.
- Dismal**; creek, a right-hand tributary to Walker Creek, rising in Giles County.
- Dismal**; creek, a small right-hand branch of Levisa Fork, rising in Buchanan County.
- Dismal**; mountain in Amherst County.
- Dismal**; swamp lying mainly in southeast Virginia, but partly in North Carolina. Its extent is rather indefinite, as its limits can not be sharply defined. Its highest point is 22 feet above sea. It is in part covered with a cypress forest and in part by canebrakes. It is traversed by the Dismal Swamp canal and by numerous smaller ditches. Near the summit is Drummond Lake.
- Dismal Swamp**; canal, running southward through the Dismal Swamp from Deep Creek to Albemarle Sound. It is accompanied throughout by a wagon road.
- Dismal Swamp**; post village in Norfolk County.
- Dispatch**; post village in Powhatan County on the Southern Railway.
- Disputanta**; post village in Prince George County on the Norfolk and Western Railway.
- Diston**; post village in Dinwiddie County.
- Ditchley**; post village in Fairfax County on the Southern Railway.
- Dividing**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- Dividing Spring**; creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Dixie**; post village in Mathews County.
- Dixon**; branch, a small right-hand tributary to New River in Carroll County.
- Dixon**; ford in New River in Carroll County.
- Dixondale**; post village in Gloucester County.
- Dixon Ridge**; summit in Rockingham County.

- Doak**; post village in Tazewell County.  
**Dobyn**; post village in Patrick County.  
**Dodds**; post village in Stafford County.  
**Doddsville**; post village in Fauquier County.  
**Dodson**; post village in Patrick County.  
**Doe**; creek, a small right-hand branch of New River in Giles County.  
**Doe**; mountains in Giles County. Elevation, 2,500 to 3,500 feet.  
**Doe Branch**; creek, a small left-hand branch of Appomattox River in Cumberland County.  
**Doehill**; post village in Highland County.  
**Doe Hollow**; gap in Buckhorn Mountains.  
**Dog e**; creek, a small right-hand tributary to Potomac River in Fairfax County.  
**Dogue**; post village in King George County.  
**Dolphin**; post village in Brunswick County.  
**Dominion**; village in Halifax County.  
**Domino**; post village in Lee County.  
**Donald**; summit in Rockbridge County.  
**Donaldsburg**; post village in Rockbridge County.  
**Dongola**; post village in Louisa County.  
**Dooley**; post village in Wise County on the Norfolk and Western Railway.  
**Dooms**; post village in Augusta County on the Norfolk and Western Railway.  
**Dorcas**; post village in Augusta County.  
**Dorchester**; post village in Wise County.  
**Dormer**; post village in Carroll County.  
**Dorrill**; run, a small right-hand tributary to Potomac River in Prince William and Fauquier counties.  
**Dorset**; post village in Powhatan County on the Southern Railway.  
**Dory**; post village in Southampton County on the Surry, Sussex and Southampton Railway.  
**Doswell**; post village in Hanover County on the Chesapeake and Ohio and the Richmond, Fredericksburg and Potomac railroads.  
**Dot**; post village in Lee County.  
**Double**; bridges across Meherrin River in Lunenburg County.  
**Doublebridge**; post village in Lunenburg County.  
**Double Top**; mountain in Madison County. Elevation, 3,000 feet.  
**Douglas**; village in Lee County.  
**Dover**; creek, a small left-hand branch of James River in Goochland County.  
**Dover**; post village in Loudoun County.  
**Dover Mines**; post village in Goochland County.  
**Dovesville**; post village in Rockingham County.  
**Downings**; post village in Richmond County.  
**Doyles**; river, a small left-hand tributary to James River in Albemarle County.  
**Doylesville**; post village in Albemarle County.  
**Dragonville**; post village in King and Queen County.  
**Drake**; branch, a small left-hand branch of North Fork of Clinch River in Scott County.  
**Drakes Branch**; post village in Charlotte County.  
**Dranesville**; post village in Fairfax County.  
**Draper**; mountains in Pulaski County. Elevation, 2,500 to 3,000 feet.  
**Draper**; mountains in Wythe and Pulaski counties. Elevation, 2,000 to 3,000 feet.  
**Draper**; post village in Pulaski County on the Norfolk and Western Railway. Altitude, 2,040 feet.  
**Drapersville**; post village in Mecklenburg County.  
**Dreaming**; creek, a small right-hand branch of James River in Campbell County.

**Dreka**; post village in Accomac County.

**Drenn**; post village in Carroll County.

**Drewry**; bluff in Chesterfield County.

**Drewrys Bluff**; post village in Chesterfield County on the Atlantic Coast Line Railroad.

**Drewryville**; post village in Southampton County on the Southern Railway.

**Driver**; post village in Nansemond County.

**Drum**; marshy point extending into Back Bay in Princess Anne County.

**Drummon**; post village in Craig County.

**Drummond**; lake in Nansemond and Norfolk counties. Elevation above sea level, 22 feet.

**Drummond Hill**; summits in Botetourt and Rockbridge counties.

**Dry**; branch, a small left-hand tributary to James River in Augusta County.

**Dry**; branch, a small left-hand tributary to Powell River in Lee County.

**Dry**; branch, a small left-hand tributary to Shenandoah River in Augusta County.

**Dry**; branch, a small right-hand tributary to James River in Botetourt County.

**Dry**; small left-hand branch of Cripple Creek in Wythe County.

**Dry**; small left-hand branch of New River in Pulaski County.

**Dry**; small left-hand branch of North Fork of Holston River in Smyth County.

**Dry**; small right-hand branch of Roanoke River in Roanoke County.

**Dry**; creek, a small left-hand branch of Appomattox River in Cumberland County.

**Dry**; creek, a small left-hand tributary to Appomattox River in Chesterfield County.

**Dry**; creek, a small right-hand branch of North Fork of Clinch River in Scott County.

**Dry**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.

**Dry**; fork, a small right-hand tributary to Clinch River in Scott County.

**Dry**; fork, a small right-hand tributary to Clinch River in Tazewell County.

**Dry**; fork, a small right-hand tributary to North Fork of Shenandoah River in Rockingham County.

**Dry**; fork, a small right-hand tributary to Wolf Creek in Bland County.

**Dry**; river, a small left-hand tributary to Shenandoah River in Rockingham County.

**Dry**; run, a small left-hand tributary to James River in Alleghany County.

**Dry**; run, a small left-hand tributary to James River in Montgomery County.

**Dry**; run, a small left-hand tributary to North Fork of Roanoke River.

**Dry**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Dry**; run, a small right-hand tributary to Shenandoah River in Page County.

**Dry**; run, a small right-hand tributary to Shenandoah River in Rockingham County.

**Dry Branch**; gap in North Mountains in Augusta County.

**Dry Branch**; post village in Pulaski County on the Norfolk and Western Railway.

**Drybridge**; post village in Chesterfield County on the Southern Railway.

**Dryburg**; post village in Halifax County.

**Dryden**; post village in Lee County on the Louisville and Nashville Railroad.

**Dryfork**; post village in Pittsylvania County on the Southern Railway. Altitude, 624 feet.

**Dry Mountain**; summit in Campbell County. Elevation, 770 feet.

**Dry Pond**; mountains in Wythe and Carroll counties. Elevation, 2,500 feet.

**Dry Tripe**; small right-hand branch of Slate Creek in Buchanan County.

**Dublin**; post village in Pulaski County on the Norfolk and Western Railway. Altitude, 2,058 feet.

**Ducat**; post village in King George County.

**Duck**; run, a small left-hand tributary to Shenandoah River in Frederick County.

**Ducker**; creek, a small left-hand branch of Appomattox River in Buckingham County.

**Duckinghoe**; creek, a small left-hand tributary to York River in Louisa County.

- Duet**; post village in Madison County.  
**Duffield**; town in Scott County. Population, 98.  
**Dugspur**; post village in Carroll County.  
**Dugwell**; village in Franklin County.  
**Duke**; post village in Louisa County.  
**Dulany**; post village in Floyd County.  
**Dulce**; post village in Albemarle County.  
**Dumbarton**; post village in Henrico County.  
**Dumfries**; town in Prince William County. Population, 160.  
**Dump**; creek, a small right-hand tributary to Clinch River, rising in Russell County.  
**Dumpcreek**; post village in Russell County.  
**Dun**; post village in Sussex County.  
**Dunavant**; post village in Spottsylvania County.  
**Dunbrooke**; post village in Essex County.  
**Duncan Knob**; summit in Jack Mountain in Bath County.  
**Duncans**; post village in Floyd County.  
**Duncans Mills**; post village in Scott County.  
**Dundee**; post village in Bedford County.  
**Dundore**; mountains in Rockingham County. Elevation, 2,500 to 3,000 feet.  
**Dungannon**; post village in Scott County.  
**Dunlap**; creek, a right-hand branch of Jackson River in Alleghany County.  
**Dunlap**; post village in Alleghany County on the Atlantic Coast Line Railroad.  
**Dunn Loring**; post village in Fairfax County.  
**Dunnsville**; post village in Essex County.  
**Dunreath**; post village in Louisa County.  
**Duprees**; post village in Charlotte County.  
**Durand**; post village in Greenvsille County on the Southern Railway.  
**Durmid**; post village in Campbell County on the Norfolk and Western and the Southern railways. Altitude, 681 feet.  
**Dutch**; post village in Amelia County.  
**Dutch Gap**; canal across the neck of James River in Henrico County.  
**Dutchman**; branch, a small right-hand tributary to New River in Carroll County.  
**Dutoy**; creek, a small right-hand branch of James River in Powhatan County.  
**Duty**; post village in Dickinson County.  
**Dwale**; post village in Dickinson County.  
**Dwight**; post village in Buchanan County on the Norfolk and Western Railway.  
**Dwina**; post village in Wise County.  
**Dyer Store**; post village in Henry County.  
**Eaglerock**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 936 feet.  
**Eagle Rock**; summit in Botetourt County.  
**Eakin**; post village in Craig County.  
**Eanes Crossroads**; post village in Brunswick County.  
**Earlehurst**; post village in Alleghany County.  
**Earls**; post village in Amelia County.  
**Early**; post village in Carroll County.  
**Earlygrove**; post village in Scott County.  
**Earlysville**; post village in Albemarle County.  
**Earnest**; post village in York County.  
**East**; branch, a small left-hand tributary to Roanoke River in Charlotte County.  
**East**; branch, a small right-hand tributary to Jackson River in Highland County.  
**East**; fork, a small right-hand tributary to New River in Carroll and Grayson counties.  
**Eastend**; post village in Alexandria County.

- Eastham**; post village in Albemarle County.
- East Leake**; post village in Goochland County.
- East Lexington**; post village in Rockbridge County on the Baltimore and Ohio and the Chesapeake and Ohio railroads.
- East Radford**; post village in Montgomery County on the Norfolk and Western Railway.
- East River**; mountains in Giles and Tazewell counties, extending northeast and southwest, bordering on Bland County, Va., and Mercer County, W. Va. Elevation, 3,000 to 4,000 feet.
- East Stone Gap**; town in Wise County. Population, 349.
- Eastview**; post village in Floyd County.
- Eastville**; county seat of Northampton County on New York, Philadelphia and Norfolk Railroad. Population, 313.
- Ebony**; post village in Brunswick County.
- Echols**; ferry over North River, near Glasgow, in Rockbridge County.
- Eckington**; post village in Culpeper County.
- Eddy**; post village in Franklin County.
- Edenburg**; post village in Shenandoah County on the Baltimore and Ohio Railroad. Altitude, 845 feet.
- Edgar**; post village in Caroline County.
- Edgehill**; post village in King George County.
- Edgerton**; post village in Brunswick County.
- Edgewater**; post village in Grayson County.
- Edgewood**; post village in Henry County.
- Edinburg**; town in Shenandoah County on the Southern Railway. Population, 512.
- Edith**; post village in Shenandoah County.
- Edmunds Store**; post village in Brunswick County.
- Edna**; post village in King and Queen County.
- Edom**; post village in Rockingham County.
- Edward Knob**; summit in Carroll County.
- Efna**; post village in Bland County.
- Effy**; post village in Wythe County.
- Eggbornsville**; post village in Culpeper County.
- Eggleston**; post village in Giles County on the Norfolk and Western Railway. Altitude, 1,644 feet.
- Eggleston**; springs in Giles County near New River.
- Egmont**; post village in Mecklenburg County.
- Ego**; post village in Floyd County.
- Eheart**; post village in Orange County.
- Ela**; village in Scott County.
- Elamsville**; post village in Patrick County.
- Elba**; post village in Pittsylvania County on the Richmond, Fredericksburg and Potomac Railroad.
- Elbow**; post village in Powhatan County.
- Elder**; creek, a small left-hand branch of Chickahominy River in Hanover County.
- Eldridges Mill**; post village in Buckingham County.
- Elect**; village in Pittsylvania County.
- Eliber Spring**; branch, a small right-hand tributary to James River in Craig County.
- Elijah**; post village in Patrick County.
- Elizabeth**; river, an estuary in southeast Virginia formed by the junction of its eastern, southern, and western branches, and opening into Hampton Roads; forms the harbor of Norfolk.

**Elizabeth City**; county, situated in the eastern part of the State in the Atlantic plain north of James River and upon the west shore of Chesapeake Bay. It is low and level. Area, 50 square miles. Population, 19,460—white, 10,757; negro, 8,582; foreign born, 1,909. County seat, Hampton. The mean magnetic declination in 1900 was  $3^{\circ} 55'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**Elk**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Elk**; creek, a small left-hand tributary to York River in Louisa County.

**Elk**; creek, a small right-hand branch of New River in Grayson County.

**Elk**; run, a small left-hand branch of Rapidan River in Madison County.

**Elk**; run, a small left-hand tributary to Shenandoah River in Augusta County.

**Elk**; run, a small right-hand tributary to Potomac River in Fauquier County.

**Elkcreek**; post village in Grayson County.

**Elk Garden**; post village in Russell County.

**Elk Garden Ridge**; mountains in Russell County. Elevation, 2,500 to 3,000 feet.

**Elkhill**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Elkhorn**; small right-hand branch of New River in Carroll County.

**Elk Horn**; mountain in Augusta County.

**Elk Knob**; summit in Wise County. Elevation, 2,500 feet.

**Elk Lick**; small right-hand tributary to Potomac River in Loudoun County.

**Elko**; post village in Henrico County on the Chesapeake and Ohio Railway.

**Elk Pond**; mountains in Rockbridge County.

**Elkrun**; post village in Fauquier County.

**Elkspur**; post village in Carroll County.

**Elk Spur**; ridge in Carroll County.

**Elkton**; post village in Rockingham County on the Chesapeake Western and the North Western railways. Altitude, 955 feet.

**Elkwood**; post village in Culpeper County on the Southern Railway.

**Ellendale**; post village in Smyth County.

**Ellerson**; post village in Hanover County on the Chesapeake and Ohio Railway.

**Ellett**; post village in Montgomery County.

**Elliott**; creek, a small left-hand tributary to South Fork of Roanoke River in Montgomery County.

**Elliott Knob**; summit of North Mountain in Augusta County. Elevation, 4,473 feet.

**Ellis**; fork, a small right-hand tributary to Appomattox River in Nottoway County.

**Ellis**; post village in Grayson County.

**Elliston**; post village in Montgomery County on the Norfolk and Western Railway.

**Ellisville**; post village in Louisa County.

**Elmeria**; post village in Rockbridge County.

**Elmington**; post village in Nelson County on the Southern Railway. Altitude, 632 feet.

**Elmo**; post village in Halifax County.

**Elmont**; post village in Hanover County.

**Elms**; post village in Sussex County.

**Elm Wood**; creek, a small, right-hand branch of Rappahannock River in Essex County.

**Elmwood**; village in Henry County.

**Elon**; post village in Amherst County.

**Elota**; post village in Carroll County.

**Elsie**; post village in Amherst County.

**Elvan**; post village in Loudoun County.

**Elway**; post village in Russell County.

- Elwood**; post village in Nansemond County.
- Ely**; creek, a small left-hand tributary to Stone Creek in Lee County.
- Emaus**; post village in Bedford County.
- Embrey**; post village in Fauquier County.
- Emmerton**; post village in Richmond County.
- Emmetts**; post village in Hanover County.
- Emory**; post village in Washington County on the Norfolk and Western Railway.  
Altitude, 2,094 feet.
- Emporia**; county seat of Greensville County on the Atlantic Coast Line and the Southern railroads. Population, 3,819.
- Enchanted**; creek, a small left-hand tributary to James River in Amherst County.
- Endicott**; post village in Franklin County.
- Enfield**; post village in King William County.
- England Ridge**; mountains in Amherst County.
- Engleman**; post village in Rockbridge County.
- English**; post village in Franklin County.
- Enoch**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Enoch**; post village in Middlesex County.
- Enoch Knob**; summit in Carroll County. Altitude, 3,022 feet.
- Enon**; post village in Goochland County.
- Enonville**; post village in Buckingham County.
- Enterprise**; post village in Southampton County.
- Entray**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Eona**; post village in Carroll County.
- Epes**; post village in Lunenburg County.
- Ephesus**; post village in Bedford County.
- Epling**; post village in Giles County.
- Epperly**; post village in Floyd County.
- Epperly Knob**; summit in Floyd County.
- Eppes**; bridge across Appomattox River between Chesterfield and Amelia counties.
- Eppes**; creek, a small left-hand branch of James River in Charles City County.
- Eppes**; island in Charles City County.
- Epps**; creek, a small left-hand tributary to James River in Albemarle County.
- Epworth**; post village in King William County.
- Era**; post village in Dinwiddie County.
- Erald**; post village in Greene County.
- Erica**; post village in Westmoreland County.
- Erin Shades**; post village in Henrico County.
- Ernest**; post village in Tazewell County.
- Esmont**; post village in Albemarle County on the Chesapeake and Ohio Railway.
- Essex**; county, situated in the eastern part of the State in the Atlantic plain, bordering on Rappahannock River on the south side. The surface is low and level. Area, 277 square miles. Population, 9,701—white, 3,576; negro, 6,125; foreign born, 10. County seat, Tappahannock. The mean magnetic declination in 1900 was 4° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.
- Essie**; post village in Pulaski County.
- Esto**; post village in Henry County.
- Ethel**; post village in Richmond County.
- Etlan**; post village in Madison County.
- Etna Mills**; post village in King William County.
- Etter**; post village in Wythe County.
- Ettricks**; post village in Chesterfield County.
- Eubon**; post village in Lunenburg County.

**Eulalia**; post village in Franklin County.

**Eura**; post village in Page County.

**Eureka Mills**; post village in Charlotte County.

**Evans Wharf**; post village in Accomac County.

**Everets**; post village in Nansemond County.

**Evergreen**; post village in Appomattox County on the Norfolk and Western Railway. Altitude, 730 feet.

**Evergreen Mills**; post village in Loudoun County.

**Everona**; post village in Orange County.

**Evington**; post village in Campbell County on the Southern Railway. Altitude, 724 feet.

**Evol**; post village in Campbell County.

**Ewell**; post village in James City County.

**Ewing**; mountains between Wythe and Carroll counties.

**Ewing**; post village in Lee County on the Louisville and Nashville Railroad.

**Exit**; post village in Nansemond County.

**Exmore**; post village in Northampton County on the New York, Philadelphia and Norfolk Railroad.

**Experiment**; post village in Amherst County.

**Ezell**; post village in Brunswick County.

**Fabers Mills**; post village in Nelson County on the Southern Railway. Altitude, 550 feet.

**Fagg**; post village in Montgomery County.

**Fairfax**; county, situated in the northeastern part of the State in the Piedmont region, bordering on the south bank of Potomac River. Its surface is undulating. Area, 433 square miles. Population, 18,580—white, 13,576; negro, 5,003; foreign born, 413. County seat, Fairfax. The mean magnetic declination in 1900 was 5° 10'. The mean annual rainfall is 40 to 50 inches, and the temperature 55°. The county is traversed by the Chesapeake and Ohio, the Southern, the Richmond, Frederick and Potomac, and the Arlington and Roundhill Branch railroads.

**Fairfax**; county seat of Fairfax County on the Chesapeake and Ohio and the Southern railways. Population, 373.

**Fairfield**; post village in Rockbridge County on the Baltimore and Ohio Railroad. Altitude, 519 feet.

**Fairoaks**; post village in Accomac County on the Southern Railway.

**Fairport**; post village in Northumberland County.

**Fairview**; post village in Scott County.

**Fairy**; post village in Grayson County.

**Faith**; post village in Buckingham County.

**Falcon**; village in Floyd County.

**Falding**; falls in Spring Creek, in Alleghany County.

**Fall**; run, a small left-hand branch of Rappahannock River in Stafford County.

**Fallcreek Depot**; post village in Pittsylvania County on the Southern Railway. Altitude, 535 feet.

**Fall Hollow**; branch, a small right-hand tributary to Jackson River in Alleghany County.

**Falling**; creek, a small left-hand branch of Roanoke River in Bedford County.

**Falling**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Falling**; creek, a small right-hand branch of James River in Chesterfield County.

**Falling**; creek, a small right-hand tributary to James River in Chesterfield County.

**Falling**; river, a small left-hand tributary to Roanoke River in Campbell County.

**Falling**; run, a small left-hand tributary to James River in Rockbridge County.



**Falling Spring**; run, a small left-hand tributary to Shenandoah River in Augusta County.

**Fallingwater**; creek, a small right-hand tributary to James River in Botetourt County.

**Falls**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.

**Falls**; run, a small left-hand branch of Rappahannock River in Stafford County.

**Falls Church**; town in Fairfax County on the Southern Railway. Population, 1,007.

**Falls Hill**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Falls Mills**; post village in Tazewell County on the Norfolk and Western Railway. Altitude, 2,323 feet.

**Fallville**; post village in Grayson County.

**Falmouth**; post village in Stafford County.

**False**; cape on sand bar on the Atlantic coast in Princess Anne County. A life-saving station is located there.

**Fan**; mountains in Albemarle County. Elevation, 1,000 to 1,500 feet.

**Fancy**; gap in mountains in Patrick County.

**Fancygap**; post village in Carroll County.

**Fancyhill**; post village in Rockbridge County.

**Fanshaw**; post village in Hanover County.

**Fantine**; post village in Pittsylvania County.

**Fariston**; post village in Charlotte County.

**Farland**; post village in Roanoke County.

**Farmer**; mountains in Carroll County. Elevation, 2,500 feet.

**Farmers Fork**; post village in Richmond County.

**Farmville**; county seat of Prince Edward County on the Farmville and Powhatan and the Norfolk and Western railroads. Population, 2,471.

**Farnham**; post village in Richmond County.

**Farr**; post village in Fairfax County.

**Farrar**; island, surrounded by James River and the Dutch Gap canal.

**Farrington**; post village in Hanover County.

**Farris**; village in Washington County.

**Fauquier**; county, situated in the northern part of the State in the Piedmont region, with the summit of the Blue Ridge as its northwestern boundary. The southern part has a rolling surface, breaking up in the northern part into short ridges and the spurs of the Blue Ridge. The altitude ranges from 200 to 3,000 feet. Area, 676 square miles. Population, 23,374—white, 15,074; negro, 8,298; foreign born, 175. County seat, Warrenton. The mean magnetic declination in 1900 was 3° 45'. The mean annual rainfall is 40 to 50 inches, and the temperature 50° to 55°. The county is traversed by the Southern Railway.

**Fauquier Springs**; post village in Fauquier County.

**Favonia**; post village in Wythe County.

**Favor**; post village in King and Queen County.

**Fawcett**; gap in Little North Mountains.

**Fawcettgap**; post village in Frederick County.

**Fawn**; small left-hand branch of Straight Creek in Lee County.

**Faye**; post village in Prince Edward County.

**Feedstone**; mountains in Rockingham County. Elevation, 3,500 feet.

**Felden**; post village in Prince Edward County.

**Felicia**; post village in Franklin County.

**Felt Knob**; summit in Carroll County. Elevation, 3,216 feet.

**Felts**; post village in Southampton County.

**Fentriss**; post village in Norfolk County.

- Fergusonville**; post village in Nottoway County.
- Fergussons Wharf**; post village in Isle of Wight County.
- Fernalda**; post village in Wise County.
- Ferrol**; post village in Augusta County on the Chesapeake and Ohio Railway.  
Altitude, 1,810 feet.
- Ferrum**; post village in Franklin County on the Norfolk and Western Railway.  
Altitude, 1,237 feet.
- Festoon**; post village in Dickenson County.
- Fetzer**; gap in Little North Mountain in Shenandoah County.
- Fiddler**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Fido**; post village in Scott County.
- Fiery**; run, a small left-hand tributary to Rappahannock River in Rappahannock County.
- Fields**; post village in Mecklenburg County.
- Fife**; post village in Goochland County.
- Fifteen Mile**; creek, a small right-hand branch of South Fork of Holston River in Washington County.
- Fig**; post village in Lee County.
- Fighting**; creek, a small left-hand branch of Appomattox River in Powhatan County.
- Figsboro**; post village in Henry County.
- Fincastle**; county seat of Botetourt County. Population, 652. Altitude, 1,250 feet.
- Finchley**; post village in Mecklenburg County on the Southern Railway.
- Findlay**; mountains in Nelson County. Elevation, 1,000 feet.
- Fine**; creek, a small right-hand branch of James River in Powhatan County.
- Finecreek Mills**; post village in Powhatan County.
- Finley**; creek, a small left-hand branch of North Fork of Holston River in Washington County.
- Finley**; post village in Grayson County.
- Finney**; post village in Accomac County on the Norfolk and Western Railway.
- Finneys Siding**; post village in Russell County.
- Finneywood**; post village in Mecklenburg County on the Southern Railway.
- First**; mountains in Page County. Elevation, 1,500 to 2,000 feet.
- Fisher**; small right-hand branch of Cripple Creek in Wythe County.
- Fisherman**; post village in Lancaster County.
- Fishers**; gap in the Blue Ridge, caused by Robertson River, in Madison County.
- Fishers Hill**; post village in Shenandoah County on the Southern Railway.
- Fishersville**; post village in Augusta County on the Chesapeake and Ohio Railway.  
Altitude, 1,320 feet.
- Fishing**; creek, a small right-hand branch of Roanoke River in Campbell County.
- Fishing**; point in Isle of Wight County, extending into James River.
- Fish Pond**; creek, a small left-hand tributary to Appomattox River in Appomattox County.
- Fitchetts**; post village in Mathews County.
- Fitzhugh**; post village in Brunswick County.
- Fiveforks**; post village in Prince Edward County.
- Fiveoaks**; post village in Tazewell County on the Norfolk and Western Railway.  
Altitude, 2,468 feet.
- Flag**; rocks in Warm Spring Mountain in Bath County.
- Flagpond**; post village in Scott County.
- Flanagans Mills**; post village in Cumberland County.
- Flat**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Flat**; creek, a small right-hand tributary to Appomattox River in Nottoway County.
- Flat**; run, a small right-hand tributary to Rappahannock River in Orange County.

**Flatridge**; post village in Grayson County.

**Flat Rock**; creek, a small right-hand tributary to Clinch River in Russell County.

**Flatrock**; post village in Scott County on the Farmville and Powhatan Railroad.

**Flatrun**; post village in Orange County.

**Flat Top**; mountains in Bland and Giles counties. Elevation, 2,000 to 3,500 feet.

**Flat Top**; summit in the central part of Bedford County. Elevation, 1,978 feet.

**Flat Top**; summit in the Peaks of Otter Mountains in the northern part of Bedford County. Elevation, 4,000.

**Flatwoods**; branch, a small left-hand tributary to Roanoke River.

**Flatwoods**; post village in Scott County.

**Flax**; post village in Dinwiddie County.

**Fleenors**; post village in Washington County.

**Fleet**; post village in Washington County.

**Flem**; post village in Patrick County.

**Fleming**; mountain in Bedford County. Elevation, 2,000 feet.

**Fletcher**; post village in Greene County.

**Flint**; post village in Floyd County.

**Flint**; run, a small right-hand tributary to Shenandoah River in Warren County.

**Flinthill**; post village in Rappahannock County.

**Flint Hill**; summit in Franklin County.

**Floris**; post village in Fairfax County.

**Floyd**; county, situated in the southern part of the State upon a summit of the Blue Ridge, here having the form of a plateau with the escarpment to the southeast. The surface consists of an undulating and broken country, drained by South Fork of Roanoke River. The altitude ranges from 2,000 to over 3,000 feet above sea level. Area, 383 square miles. Population, 15,388—white, 14,313; negro, 1,075; foreign born, 4. County seat, Floyd. The mean magnetic declination in 1900 was 4° 45'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°.

**Floyd**; county seat of Floyd County. Population, 402.

**Flumen**; post village in Rockbridge County.

**Fluvanna**; county, situated in the central part of the State in the Piedmont region.

It is traversed by Rappahannock River, while the James forms its southern boundary. The surface is undulating; it is elevated 250 to 500 feet above sea level. Area, 289 square miles. Population, 9,050—white, 5,039; negro, 4,011; foreign born, 18. County seat, Palmyra. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio Railway.

**Fly**; post village in Halifax County.

**Fodder House**; summit in Black Creek Mountains in Bath County.

**Folly Mills**; post village in Augusta County on the Baltimore and Ohio Railroad.

**Foneswood**; post village in Westmoreland County.

**Fontella**; post village in Bedford County.

**Forbes**; post village in Buckingham County.

**Ford**; bridge across Chickahominy River in Hanover County.

**Ford**; post village in Dinwiddie County on the Norfolk and Western Railway.

**Fore**; mountains in Alleghany County. Elevation, 2,500 feet.

**Foremans**; run, a small left-hand tributary to Shenandoah River in Frederick County.

**Foremost**; run, a small left-hand tributary to York River in Spotsylvania County.

**Fores Store**; post village in Appomattox County.

**Forestburg**; post village in Prince William County.

**Forest Depot**; post village in Bedford County on the Norfolk and Western Railway and the Baltimore and Ohio railroads. Altitude, 863 feet.

- Foresthill**; post village in Brunswick County.
- Forestville**; post village in Shenandoah County on the Southern Railway.
- Forge**; post village in Dinwiddie County.
- Fork**; mountains in Giles County. Elevation, 2,500 to 4,000 feet.
- Fork**; mountains in Greene County. Elevation, 2,000 to 3,000 feet.
- Forkland**; post village in Nottoway County.
- Fork Mountain**; summit in Amherst County. Elevation, 2,000 to 2,500 feet.
- Forks of Buffalo**; post village in Amherst County.
- Forksville**; post village in Mecklenburg County.
- Fork Union**; post village in Fluvanna County.
- Formosa**; post village in Charlotte County.
- Fort**; valley between Massanutten, Powells, and Three Top mountains.
- Fort Blackmore**; post village in Scott County.
- Fort Defiance**; post village in Augusta County on the Baltimore and Ohio Railroad. Altitude, 1,247 feet.
- Fort Hoover**; village in Rockingham County.
- Fort Lee**; post village in Henrico County on the Chesapeake and Ohio Railway.
- Fort Lewis**; mountains in Roanoke County. Elevation, 1,500 to 3,800 feet.
- Fort Lewis**; post village in Bath County.
- Fort Mitchell**; post village in Lunenburg County.
- Fort Monroe**; military post in Elizabeth City County, at Old Point Comfort, on Hampton Roads, opposite Norfolk.
- Fort Myer**; military post and county seat in Alexandria County on the Washington, Alexandria and Mount Vernon Electric Railway.
- Foster**; post village in Mathews County.
- Foster Knob**; summit in Bedford County. Elevation, 2,576 feet.
- Fosters Falls**; post village in Wythe County on the Norfolk and Western Railway. Altitude, 1,960 feet.
- Fostoria**; post village in Alexandria County on the Southern Railway.
- Fountains**; creek, a small right-hand branch of Meherrin River in the southeastern part of the State.
- Four Mile**; run, a small right-hand branch of Potomac River in Alexandria County.
- Fowler**; village in Washington County.
- Fowlers**; small left-hand branch of North Fork of Holston River, rising in Scott County.
- Fox**; creek, a small right-hand branch of New River in Grayson County.
- Fox**; post village in Grayson County.
- Fox Knob**; summit in Grayson County. Elevation, 3,500 feet.
- Francisco**; post village in Craig County.
- Francis Mill**; creek, a small left-hand branch of Cripple Creek in Wythe County.
- Frank**; branch, a small left-hand tributary to Appomattox River in Chesterfield County.
- Frank**; branch, a small right-hand tributary to James River in Chesterfield County.
- Franklin**; county, situated in the southern part of the State in the upper portion of the Piedmont plain, including the escarpment of the ridge. The altitude ranges from 1,000 to 3,500 feet. Area, 690 square miles. Population, 25,953—white, 20,005; negro, 5,947; foreign born, 4. County seat, Rockymount. The mean magnetic declination in 1900 was  $1^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western and the Southern railways.
- Franklin**; creek, a small left-hand tributary to James River in Amherst County.
- Franklin**; town in Southampton County on the Seaboard Air Line and the Southern railways. Population, 1,143.

**Franklin City**; post village in Accomac County on the Philadelphia, Baltimore and Washington Railroad.

**Franktown**; post village in Northampton County.

**Fray**; post village in Madison County.

**Fred**; post village in Floyd County.

**Frederick**; county, situated in the northern part of the State in the Appalachian Valley; its surface is mainly a rolling plain, but intersected by a number of minor ridges, separated by limestone valleys; the altitude ranges from 500 to 2,500 feet, that elevation being found on the Great North Mountain and in the western part of the county. Area, 425 square miles. Population, 13,239—white 12,486; negro, 753; foreign born, 84. County seat, Winchester. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Baltimore and Ohio and the Cumberland Valley railroads.

**Fredericksburg**; city in Spottsylvania County, but independent in government, on the Potomac, Fredericksburg and Piedmont and the Richmond, Fredericksburg and Potomac railroads. Population, 5,068.

**Fredericks Hall**; post village in Louisa County on the Chesapeake and Ohio Railway.

**Freeda**; post village in Pulaski County.

**Freedom Hill**; summit in Fairfax County.

**Freeling**; post village in Dickinson County.

**Freeman**; post village in Brunswick County on the Chesapeake and Ohio Railway.

**Freemason**; run, a small left-hand tributary to Shenandoah River in Augusta County.

**Freeport**; post village in Gloucester County.

**Freeshade**; post village in Middlesex County.

**Freestone**; point on Potomac River in Prince William County.

**Free Union**; post village in Albemarle County.

**French Hay**; post village in Hanover County.

**Fresh**; pond in eastern part of Princess Anne County.

**Freshwater**; post village in Nelson County.

**Fiar**; post village in Amherst County.

**Friar**; summit in Amherst County.

**Fridley**; gap in Massanutten Mountain.

**Friedens**; village in Rockingham County.

**Friendship**; post village in Washington County.

**Friends Mission**; post village in Patrick County.

**Fries**; post village in Grayson County on the Norfolk and Western Railway.

**Fritts**; village in Lee County.

**Front Royal**; county seat of Warren County on the Norfolk and Western and the Southern railways. Altitude, 546 feet. Population, 1,005.

**Frost**; post village in Rappahannock County.

**Fruitley**; post village in Albemarle County.

**Fry**; post village in Henry County.

**Fryingpan**; creek, a small left-hand branch of Russell Fork, rising in Dickenson County.

**Fugates Hill**; post village in Russell County.

**Fulks Run**; post village in Rockingham County.

**Fullhardt Knob**; summit in Botetourt County. Elevation, 2,329 feet.

**Fultz**; river, a small right-hand tributary to Shenandoah River in Page County.

**Funt**; creek, a small right-hand branch of Russell Fork, rising in Buchanan County.

**Furnace**; post village in Rockingham County on the Potomac, Fredericksburg and Piedmont Railroad.

**Furnace**; branch, a small left-hand tributary to Shenandoah River in Frederick County.

**Furnace**; branch, a small right-hand tributary to James River in Botetourt County.

**Gage**; post village in Floyd County.

**Gainesboro**; post village in Frederick County.

**Gaines Crossroads**; post village in Rappahannock County.

**Gaines Mill**; pond at head of Powhite Creek, a small left-hand branch of Chickahominy River in Hanover County.

**Gainesville**; post village in Prince William County on the Southern Railway.

**Gala**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 938 feet.

**Galfred**; gap, caused by a left-hand tributary to James River in Alleghany Front Mountains in Highland County.

**Galts Mills**; post village in Amherst County.

**Galveston**; post village in Pittsylvania County on the Southern Railway.

**Gambette**; post village in Carroll County on the Norfolk and Western Railway.

**Gambrill**; post village in Fairfax County.

**Gap**; mountains in Giles County. Elevation, 2,000 to 2,500 feet.

**Gap**; run, a small right-hand branch of Potomac River in Fauquier County.

**Gap**; run, a small right-hand tributary to Potomac River in Frederick County.

**Gap**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Gaprun**; post village in Frederick County.

**Gap Store**; post village in Tazewell County.

**Garden**; fork, a small left-hand branch of Levisa Fork, rising in Buchanan County.

**Garden**; mountains in Tazewell and Bland counties. Elevation, 3,000 to 4,000 feet.

**Gardenia**; post village in Prince Edward County.

**Garden Mountain**; summit in Botetourt County.

**Gardners**; post village in Russell County on the Norfolk and Western Railway.

**Garfield**; post village in Fairfax County.

**Gargatha**; post village in Accomac County.

**Garnard**; small right-hand branch of Roanoke River in Roanoke County.

**Garners**; creek, a small left-hand tributary to Yadkin River, rising in Patrick County.

**Garrett**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Garrett**; post village in Buckingham County.

**Garrison**; ford in New River in Grayson County.

**Garrisonville**; post village in Stafford County.

**Garth**; post village in Albemarle County.

**Gary**; post village in Lunenburg County.

**Garysville**; post village in Prince George County.

**Gasburg**; post village in Brunswick County.

**Gaskins**; post village in Greenville County.

**Gaspards**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Gate City**; county seat of Scott County on the Virginia and Southwestern Railway. Population, 521.

**Gatewood**; post village in Spottsylvania County.

**Gatlion**; branch, a small left-hand tributary to James River in Montgomery County.

**Gayle**; post village in Scott County.

**Gaylord**; post village in Clarke County.

**Gays**; post village in Louisa County.

**Gayton**; post village in Henrico County.

**Gee**; post village in Prince George County.

- Genito**; creek, a small left-hand branch of James River in Goochland County.
- Genito**; post village in Powhatan County.
- Genoa**; post village in Rockingham County.
- George**; creek, a small left-hand tributary to Russell Fork, rising in Dickenson County.
- George**; creek, a small right-hand branch of Pound River, rising in Dickenson County.
- Georgel**; post village in Wise County.
- Georges**; run, a small left-hand branch of South Fork of Roanoke River in Montgomery County.
- Georges Mill**; post village in Loudoun County.
- Gera**; post village in King George County.
- German**; river, a small right-hand tributary to Shenandoah River in Rockingham County.
- German**; river, a small left-hand tributary to Shenandoah River in Rockingham County.
- Germania**; ford across Rapidan River in Culpeper County.
- German Ridge**; mountains in Madison County. Elevation, 1,000 to 1,500 feet.
- Gertie**; post village in Norfolk County.
- Getz**; post village in Shenandoah County.
- Gholsonville**; post village in Brunswick County.
- Gibson Hill**; summit in Augusta County.
- Gibson Knob**; summit in Carroll County. Elevation, 3,036.
- Gibson Station**; post village in Lee County on the Chesapeake and Ohio Railway.
- Gibsonville**; post village in Russell County.
- Gidsville**; post village in Amherst County.
- Giffraff**; post village in Charlotte County.
- Gig**; post village in Lunenburg County.
- Giles**; county, situated in the western part of the State in the Appalachian Valley. Its surface consists of sandstone ridges separated by limestone valleys. It is crossed by New River and drained by that stream and its tributaries. The altitude ranges from 1,500 to 4,400 feet above sea level. Area, 349 square miles. Population, 10,793—white, 9,994; negro, 799; foreign born, 22. County seat, Pearisburg. The mean magnetic declination in 1900 was 2° 55'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western and the Big Stone railways.
- Gillaspie**; post village in Bedford County on the Norfolk and Western Railway. Altitude, 2,254 feet.
- Gilliamsville**; post village in Buckingham County.
- Gillis**; creek, a small left-hand branch of James River in Henrico County.
- Gills**; creek, a small head branch of Meherrin River, rising in Charlotte County.
- Gills**; creek, a small right-hand tributary to Roanoke River in Franklin County.
- Gills**; post village in Amelia County on the Southern Railway.
- Gilman**; post village in Hanover County.
- Gilmerton**; post village in Norfolk County on the Norfolk and Western Railway.
- Gilmores Mills**; post village in Rockbridge County on the Chesapeake and Ohio Railway.
- Gin**; creek, a small left-hand branch of Straight Creek in Lee County.
- Glade**; creek, a small left-hand tributary to New River in Wythe County.
- Glade**; creek, a small left-hand tributary to Roanoke River in Roanoke and Botetourt counties.
- Glade**; creek, a small right-hand tributary to New River in Carroll County.
- Gladehill**; post village in Franklin County on the Southern Railway.
- Gladesboro**; post village in Carroll County.
- Glade Spring**; town in Washington County on the Norfolk and Western Railway. Altitude, 2,074 feet. Population, 304.

**Gladeville**; town in Wise County on the Norfolk and Western and the Virginia and Kentucky railways. Altitude, 2,474 feet. Population, 511.

**Gladstone**; post village in Nelson County on the Chesapeake and Ohio Railway.

**Gladys**; fork, a small right-hand tributary to New River in Grayson County.

**Gladys**; run, a small right-hand tributary to Mattaponi River in Spottsylvania County.

**Gladys**; post village in Campbell County on the Norfolk and Western Railway. Altitude, 770 feet.

**Glasgow**; post village in Rockbridge County on the Chesapeake and Ohio and the Norfolk and Western railways.

**Glass**; post village in Gloucester County.

**Glenallen**; post village in Henrico County on the Richmond, Fredericksburg and Potomac Railroad. Altitude, 855 feet.

**Glenbrook**; post village in Fairfax County.

**Glencairlyn**; post village in Alexandria County on the Southern Railway.

**Glendale**; post village in Henrico County.

**Glendower**; post village in Albemarle County.

**Glendoyle**; post village in Dinwiddie County.

**Glenfall**; post village in Appomattox County.

**Glenford**; post village in Washington County.

**Glenland**; post village in Pittsylvania County.

**Glenlyn**; post village in Giles County on the Norfolk and Western Railway. Altitude, 1,520 feet.

**Glenmore**; post village in Buckingham County.

**Glenns**; post village in Gloucester County.

**Glenora**; post village in Spottsylvania County.

**Glenvar**; post village in Roanoke County on the Norfolk and Western Railway.

**Glen Wilton**; post village in Botetourt County on the Chesapeake and Ohio Railway.

**Globe**; post village in King William County.

**Glory**; post village in Madison County.

**Gloucester**; county, situated in the eastern part of the State on the Atlantic plain on the north side of York River, at its mouth, and the west side of Chesapeake Bay; it is but little elevated above tide. Area, 253 square miles. Population, 12,832—white, 6,224; negro, 6,608; foreign born, 14. County seat, Gloucester. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.

**Gloucester**; county seat of Gloucester County.

**Gloucester Point**; post village in Gloucester County.

**Glove**; post village in Lunenburg County.

**Goblintown**; post village in Patrick County.

**Goby**; post village in King George County.

**Godfrey**; post village in Culpeper County.

**Goffs**; post village in Bedford County.

**Gogginsville**; village in Franklin County.

**Golansville**; post village in Caroline County.

**Golddale**; post village in Orange County.

**Golden Spring**; post village in Buchanan County.

**Goldenvale**; creek, a small right-hand branch of Rappahannock River in Caroline County.

**Goldhill**; post village in Buckingham County. Altitude, 540 feet.

**Gold Mine**; creek, a small left-hand tributary to York River in Louisa County.

**Goldvein**; post village in Fauquier County.

**Gondola**; post village in Buckingham County.



**Goochland**; county, situated in the central part of the State in the Piedmont region. It is drained by James River, which forms its southern boundary. The altitude ranges from 200 to 400 feet. Area, 296 square miles. Population, 9,519—white, 3,961; negro, 5,558; foreign born, 30. County seat, Goochland. The mean magnetic declination in 1900 was 3° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio Railway.

**Goochland**; county seat of Goochland County.

**Goodall**; post village in Hanover County.

**Goode**; bridge across Appomattox River between Chesterfield and Amelia counties.

**Goode**; creek, a small left-hand branch of Appomattox River in Chesterfield County.

**Goode**; creek, a small right-hand branch of James River in Chesterfield County.

**Goodes**; post village in Bedford County on the Norfolk and Western Railway.

**Goodes Ferry**; post village in Mecklenburg County.

**Goodloes**; post village in Spottsylvania County.

**Goodman**; post village in Roanoke County.

**Goods Mills**; post village in Rockingham County.

**Goods Mountain**; summit in Rockingham County.

**Goodview**; post village in Bedford County.

**Goodwin**; bridge across Stoney Creek in Dinwiddie County.

**Goodwin**; post village in Spottsylvania County.

**Goodwins**; ferry across New River in Giles County.

**Goodwins Ferry**; post village in Giles County.

**Goodwynsville**; post village in Dinwiddie County.

**Gooneys**; creek, a small right-hand tributary to Shenandoah River in Warren County.

**Goose**; creek, a left-hand branch of Roanoke River, formed by two forks, North and South, in Bedford County.

**Goose**; creek, a right-hand branch of Potomac River in Loudoun County.

**Goose**; creek, a small right-hand tributary to Potomac River in Rappahannock County.

**Goose**; creek, a small right-hand tributary to Potomac River in Fauquier and Loudoun counties.

**Goose**; creek, a small right-hand tributary to Shenandoah River in Augusta County.

**Gordonsville**; town in Orange County on the Chesapeake and Ohio Railway. Population, 603.

**Gore**; post village in Frederick County.

**Goshen**; town in Rockbridge County on the Chesapeake and Ohio and the Rockbridge Alum Springs and Victoria and Western railroads. Altitude, 1,410 feet. Population, 253.

**Goshen Bridge**; post village in Rockbridge County.

**Gossan**; post village in Carroll County.

**Gouldin**; post village in Hanover County.

**Grace**; post village in Princess Anne County.

**Gracepoint**; post village in Lancaster County.

**Grady**; fork, a small left-hand fork of Mountain Fork in Scott County.

**Grady**; post village in Pittsylvania County.

**Grafton**; post village in York County.

**Graham**; branch, a small right-hand tributary to New River in Wythe County.

**Graham**; creek, a small left-hand tributary to James River in Amherst County.

**Graham**; town in Tazewell County on the Norfolk and Western Railway. Altitude, 2,387 feet. Population, 1,554.

**Grahams Forge**; post village in Wythe County. Altitude, 2,387 feet.

**Grangeville**; post village in Accomac County.

**Granite**; post village in Chesterfield County on the Chesapeake and Ohio and the Southern railways.

**Granite Springs**; post village in Spottsylvania County.

**Grannys**; run, a small right-hand tributary to James River in Craig County.

**Grant**; post village in Grayson County.

**Grantland**; post village in Henrico County on the Chesapeake and Ohio Railway.

**Grape**; post village in Accomac County.

**Grapefield**; post village in Bland County.

**Grapelawn**; village in Nelson County.

**Grape Vine**; bridge across the Chickahominy River in Hanover County.

**Grassfield**; post village in Norfolk County.

**Grassland**; post village in Orange County.

**Grassy**; creek, a small left-hand tributary to Clinch River, rising in Russell County.

**Grassy**; creek, a small right-hand branch of Roanoke River in North Carolina and southern Virginia.

**Grassy**; creek, a small right-hand branch of Levisa Fork in Buchanan County.

**Grassy**; creek, a small right-hand tributary to New River in Carroll County.

**Grassy Hill**; summit in Franklin County. Elevation, 1,968 feet.

**Grassy**; mount in Rockbridge County.

**Grattan Hill**; summit in Rockingham County. Elevation, 1,500 feet.

**Gratton**; post village in Tazewell County.

**Gravelhill**; post village in Buckingham County.

**Gravelly**; small right-hand branch of Roanoke River in Pittsylvania and Franklin counties.

**Gravelly**; run, a small left-hand tributary to Nottoway River in Dinwiddie County.

**Gravelly**; run, a small right-hand branch of Rowanty Creek in Dinwiddie County.

**Gravel Spring**; post village in Frederick County.

**Graves Mill**; post village in Madison County.

**Gray**; small right-hand branch of Maiden Spring Creek, a tributary to Clinch River, in Tazewell County.

**Gray**; post village in Sussex County.

**Grays**; a small right-hand branch of Cripple Creek in Wythe County.

**Grayson**; county, situated in the southern part of the State along the North Carolina boundary. It is bounded on the north by Iron Mountain. Its surface is broken, and it is drained by New River. The altitude ranges from 3,000 to over 4,000 feet. Area, 438 square miles. Population, 16,853—white, 15,894; negro, 959; foreign born, 7. County seat, Independence. The mean magnetic declination in 1900 was 15'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°.

**Grayson**; post village in Carroll County on the Norfolk and Western Railway.

**Graysville**; post village in Floyd County.

**Greasy**; creek, a small right-hand tributary to New River in Floyd and Carroll counties.

**Great**; run, a small left-hand branch of Rappahannock River in Fauquier County.

**Great**; branch, a small right-hand tributary to James River in Chesterfield County.

**Great**; run, a small right-hand tributary to Rappahannock River in Madison County.

**Greatbridge**; post village in Norfolk County.

**Greatfalls**; post village in Fairfax County.

**Great Knobs**; summits in Washington County along the bank of Holston River.

**Great Narrows**; passage between Marshy Islands connecting North and Back bays in Princess Anne County.

**Great North**; mountain on west side of Shenandoah Valley. Elevation, 2,000 to 4,000 feet.

**Greek**; post village in Grayson County.

**Green**; creek, a small left-hand branch of Appomatox River in Cumberland County.

**Green**; creek, a small left-hand tributary to James River in Albemarle County.

**Green**; marshy point on North Landing River in Princess Anne County.

**Green**; mountain in Bedford County. Elevation, 1,500 to 1,747 feet.

**Green**; mountain in Page County.

**Green**; mountains in Albemarle County. Elevation, 500 feet.

**Greenbackville**; post village in Accomac County.

**Greenbay**; post village in Prince Edward County on the Southern Railway. Altitude, 589 feet.

**Greenbrier**; fork, a small right-hand tributary to Russell Fork, rising in Buchanan County.

**Greencove**; post village in Washington County.

**Green Cove**; small left-hand branch of White Top Creek, tributary to South Fork of Holston River, cutting into Stone Mountain.

**Greendal**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Greendale**; post village in Washington County.

**Greendun**; post village in Halifax County.

**Greene**; county, situated in the central part of the State in the Piedmont region, stretching from the Rapidan River to the summit of the Blue Ridge. The southeastern part of the county is undulating, while the remainder is occupied by heavy spurs of the Blue Ridge. The altitude is from 500 feet at Rapidan River to 2,400 feet at High Knob on the Blue Ridge. Area is 150 square miles. Population, 6,214—white, 4,783; negro, 1,431; foreign born, 2. County seat, Stanardsville. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 50 inches, and the temperature 50° to 55°.

**Greensville**; county, located in the southern part of the State on the Atlantic plain, bordering on North Carolina. It has a rolling surface, and but little elevated above the sea. Area is 288 square miles. Population, 9,758—white, 3,402; negro, 6,356; foreign born, 51. County seat, Emporia. The mean magnetic declination in 1900 was 3° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Atlantic Coast Line and the Southern railroads.

**Greenfield**; post village in Nelson County.

**Green Hill**; ferry across Roanoke River in Halifax County.

**Green Hill**; mountains in Rockbridge County.

**Greenlaws Wharf**; post village in King George County.

**Greenlee**; post village in Rockbridge County on the Chesapeake and Ohio Railway.

**Greenmount**; post village in Rockingham County.

**Green Mountain**; summit in Albemarle County.

**Greenplains**; post village in Greensville County on the Southern Railway.

**Green Ridge**; mountains in Botetourt County. Elevation, 1,500 to 2,453 feet.

**Green Sea**; marsh forming a part of Dismal Swamp.

**Green Spring**; run, a small right-hand tributary to Potomac River in Frederick County.

**Greens Knob**; summit in Bedford County. Elevation, 2,563 feet.

**Greenspring Depot**; post village in Louisa County on the Chesapeake and Ohio Railway. Altitude, 529 feet.

**Green Valley**; post village in Bath County.

**Greenville**; post village in Augusta County on the Baltimore and Ohio and the Norfolk and Western railroads. Altitude, 1,547 feet.

**Greenway**; post village in Nelson County on the Chesapeake and Ohio Railway.

**Greenwich**; post village in Prince William County on the Norfolk and Southern Railroad.

**Greenwood Depot**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Greers**; ford across Roanoke River in Bedford County.

**Greyburn**; post village in Buckingham County.

**Greystone**; village in Henry County.

**Gridley**; post village in Shenandoah County.

**Griffinsburg**; post village in Culpeper County.

**Griffith**; post village in Bath County on the Chesapeake and Ohio Railway.

**Griffith Knob**; summit in Bland County. Altitude, 3,773 feet.

**Grigsby**; post village in King George County.

**Grimes**; creek, a small right-hand branch of Roanoke River in Franklin County.

**Grimes**; post village in Frederick County.

**Grimstead**; post village in Mathews County.

**Grindall**; creek, a small right-hand branch of James River in Chesterfield County.

**Grinels**; post village in Middlesex County.

**Grindstone**; mountains in Page County. Elevation, 1,500 to 2,500 feet.

**Grindstone**; summit in Augusta County.

**Grizzard**; post village in Sussex County on the Southern Railway.

**Grizzle**; post village in Dickenson County.

**Grose**; creek, a small left-hand branch of South Fork of Holston River in Washington County.

**Groseclose**; post village in Smyth County.

**Grosses**; post village in Smyth County.

**Grotons**; post village in Accomac County.

**Grottoes**; post village in Rockingham County on the Norfolk and Western Railway.

**Grove**; post village in York County on the Chesapeake and Ohio Railway.

**Grovehill**; post village in Page County on the Norfolk and Western Railway. Altitude, 963 feet.

**Grundy**; county seat of Buchanan County. Population, 200. Altitude, 1,065 feet.

**Guess**; fork, a small right-hand branch of Knox Creek, rising in Buchanan County.

**Guest**; river, a small right-hand branch of Clinch River, rising in Wise County.

**Guilford**; post village in Accomac County on the Southern Railway.

**Guinea**; mountains in Giles County.

**Guinea Mills**; post village in Cumberland County.

**Guineys**; post village in Caroline County.

**Gulley Mountain**; summit in Botetourt County.

**Gumspring**; post village in Louisa County.

**Gun Mountain**; summit in Amherst County.

**Gunahill**; post village in Dinwiddie County.

**Gunston**; post village in Fairfax County.

**Gunston Cove**; an arm of the Potomac River, in the southern part of Fairfax County, into which enter Accotink and Pohick bays.

**Guy**; post village in Mecklenburg County.

**Guyann**; post village in Mathews County.

**Guys**; run, a small left-hand tributary to James River in Bath and Rockbridge counties.

**Gwathmey**; station in Hanover County, on the Richmond, Fredericksburg and Potomac Railroad.

**Gypsum**; post village in Smyth County on the Norfolk and Western Railway.

**Gypsy**; post village in Mecklenburg County.

**Haddonfield**; post village in Wise County.

**Hadens**; post village in Botetourt County on the Chesapeake and Ohio Railway.

**Hadensville**; post village in Goochland County.

**Hadlock**; post village in Northampton County.

**Hagan**; post village in Lee County on the Louisville and Nashville Railroad.

**Hagood**; post village in Patrick County.

**Hague**; post village in Westmoreland County.

**Haislets**; creek, a small right-hand tributary to James River in Rockbridge County.

**Hale**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.

**Haleford**; post village in Franklin County.

**Hales**; bridge across Roanoke River in Franklin County.

**Hales**; creek, a small left-hand branch of Roanoke River in Bedford County.

**Hales Mill**; post village in Scott County.

**Halfway**; post village in Fauquier County.

**Halifax**; county, located on the southern boundary of the State, the northern and eastern boundaries following the Roanoke River. It is situated in the Piedmont region, and its surface is undulating, with little relief. The altitude rises from about 300 feet to 600 feet above sea level. Area, 806 square miles. Population, 37,197—white, 17,922; negro, 19,275; foreign born, 102. County seat, Houston. The mean magnetic declination in 1900 was  $2^{\circ} 15'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western and the Southern railways.

**Hallieford**; post village in Mathews County.

**Hallowing**; point on Potomac River in Fairfax County.

**Hallsboro**; post village in Chesterfield County on the Southern Railway.

**Hallwood**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Halsteads Point**; post village in York County.

**Hamburg**; post village in Shenandoah County.

**Hamilton**; town in Loudoun County on the Southern Railway. Population, 364.

**Hamilton Draft**; small left-hand tributary to James River in Augusta County.

**Hamilton Knob**; summit in Draper Mountains. Elevation, 3,163.

**Hammet**; post village in Bedford County.

**Hampden Sidney**; post village in Prince Edward County.

**Hampstead**; post village in King George County.

**Hampton**; county seat of Elizabeth City County on the Chesapeake and Ohio Railway.

**Hampton Roads**; harbor at mouth of James River, by which the latter is connected with Chesapeake Bay. It lies between Newport News and Fort Monroe on the north and the shore about Norfolk Harbor on the south.

**Handsom**; post village in Southampton County on the Seaboard Air Line Railway.

**Handy**; village in Franklin County.

**Hanford**; post village in Mecklenburg County.

**Hanger**; post village in Buchanan County.

**Hanging Rock**; summit in Potts Mountain. Elevation, 3,000 feet.

**Hangmans**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Hank**; branch, a small right-hand tributary to New River in Carroll County.

**Hankey**; mountains in Augusta County. Elevation, 3,000 feet.

**Hanna**; post village in Wise County.

**Hanover**; county, situated in the central part of the State lying in part in the Piedmont region and in part on the Atlantic plain. It is traversed by South Anna River, North Anna River forming its northern boundary. The altitude ranges from 100 to 300 feet above sea level. Area, 478 square miles. Population, 17,618—white, 9,696; negro, 7,898; foreign born, 72. County seat, Hanover. The mean magnetic declination in 1900 was  $3^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio and the Richmond, Frederick and Potomac railroads.

**Hanover**; county seat of Hanover County on the Chesapeake and Ohio Railway.

**Hansonville**; post village in Russell County. Altitude, 2,175 feet.

- Happy**; creek, a small right-hand branch of Shenandoah River in Warren County.  
**Happy Creek**; post village in Warren County on the Southern Railway. Altitude, 790 feet.  
**Haran**; post village in Roanoke County.  
**Harborton**; post village in Accomac County.  
**Hardenburg**; post village in Spottsylvania County.  
**Hardesty**; post village in Warren County.  
**Hardie**; post village in Henry County.  
**Hardware**; post village in Fluvanna County on the Chesapeake and Ohio Railway.  
**Hardware**; river, a small left-hand tributary to James River in Albemarle County, formed by North and South forks.  
**Hardy**; creek, a small right-hand tributary to New River in Carroll County.  
**Hardy**; creek, a small right-hand tributary to Powell River in Lee County.  
**Hardy**; run, a small right-hand tributary to Jackson River in Alleghany County.  
**Hardys Ford**; post village in Franklin County.  
**Hargrove**; creek, a small left-hand tributary to James River in Nelson County.  
**Harkening Hill**; summit in the Blue Ridge in Botetourt County. Altitude, 3,878 feet.  
**Harless**; post village in Montgomery County.  
**Harman**; post village in Tazewell County on the Baltimore and Ohio Railroad.  
**Harmon**; branch, a small right-hand tributary to Jackson River in Alleghany County.  
**Harmony**; small left-hand branch of New River in Pulaski County.  
**Harmony**; post village in Halifax County.  
**Harmony Village**; post village in Middlesex County.  
**Harpers Home**; post village in Brunswick County.  
**Hartell**; post village in Nansemond County.  
**Harris**; small left-hand branch of Roanoke River in Bedford County.  
**Harris**; creek, a small left-hand tributary to James River in Albemarle County.  
**Harris**; post village in Louisa County.  
**Harris Creek**; post village in Amherst County.  
**Harrison**; creek, a small right-hand tributary to James River in Dinwiddie County.  
**Harrisonburg**; county seat of Rockingham County on the Baltimore and Ohio, the Chesapeake Western, and the Southern railroads. Altitude, 1,338 feet. Population, 3,521.  
**Harriston**; post village in Augusta County on the Norfolk and Western Railway.  
**Harrisville**; post village in Shenandoah County.  
**Harry**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.  
**Harshberger**; gap in Massanutten Mountain in Rockingham County.  
**Hartsack**; post village in Scott County.  
**Hartwood**; post village in Stafford County.  
**Harvest**; village in Lee County.  
**Hervey Mills**; post village in Warren County.  
**Haste**; post village in Franklin County.  
**Hat**; creek, a small left-hand tributary to James River in Nelson County.  
**Hat**; creek, a small left-hand tributary to Roanoke River in Campbell County.  
**Hat**; post village in Shenandoah County.  
**Hatcher**; creek, a small right-hand tributary to James River in Buckingham County.  
**Hatcher**; post village in Cumberland County.  
**Hatcher**; run, a small branch of Rowanty Creek in Dinwiddie County.  
**Hatcher**; run, a small left-hand tributary to Nottoway River in Dinwiddie County.  
**Hatcreek**; post village in Campbell County.  
**Hatfield**; creek, a small right-hand branch of Roanoke River in Franklin County.  
**Hatton**; post village in Albemarle County on the Chesapeake and Ohio Railway.  
**Haught**; post village in Franklin County.

- Haw**; branch, small right-hand tributary to Appomattox River in Amelia County.
- Haw**; small right-hand branch of New River in Pulaski County.
- Hawk**; post village in Cumberland County on the Farmville and Powhatan Railroad.
- Hawkins**; creek, a small left-hand tributary to York River in Louisa County.
- Hawkins**; run, a small left-hand tributary to Nottoway River in Dinwiddie County.
- Hawkinstown**; post village in Shenandoah County.
- Hawks Bill**; creek, a small right-hand branch of Shenandoah River in Rockingham County.
- Hawksbill**; creek, a small right-hand tributary to Shenandoah River in Page County.
- Hawks Bill**; summit in the Blue Ridge in Madison County. Elevation, 4,066 feet.
- Hawlin**; post village in Rappahannock County.
- Hay**; run, a small right-hand tributary to Roanoke River in Franklin County.
- Haycock**; post village in Floyd County.
- Hayes Store**; post village in Gloucester County.
- Hayfield**; post village in Frederick County.
- Haymakertown**; post village in Botetourt County.
- Haymarket**; post village in Prince William County on the Southern Railway.
- Haynesville**; post village in Richmond County.
- Hays**; creek, a small right-hand tributary to James River in Alleghany County.
- Hays**; creek, a small right-hand tributary to Jackson River in Alleghany County.
- Hays**; creek, a small left-hand tributary to James River in Rockbridge County.
- Haysi**; post village in Dickinson County.
- Hayter**; gap in Clinch Mountains in Washington County.
- Haywood**; post village in Madison County.
- Hazel**; river, a small right-hand tributary to Rappahannock River in Rappahannock and Culpeper counties.
- Hazel**; run, a small right-hand branch of Rappahannock River in Spotsylvania County.
- Hazelspring**; post village in Washington County.
- Headforemost**; mountain in Bedford County. Elevation, 3,773 feet.
- Headquarters**; post village in Shenandoah County.
- Headwaters**; post village in Highland County.
- Healing Springs**; post village in Bath County.
- Heard**; summit in Albemarle County.
- Hearing**; post village in Norfolk County.
- Heathsville**; county seat of Northumberland County.
- Hebron**; post village in Dinwiddie County.
- Heiskell**; post village in Frederick County.
- Helena**; post village in Bedford County on the Virginia-Carolina Railway.
- Hell**; creek, a bayou tributary to Back Bay in Princess Anne County.
- Helm Mountain**; summit in Nelson County.
- Helms**; post village in Franklin County.
- Helton**; creek, a small left-hand branch of New River, rising in Grayson County.
- Hematite**; post village in Alleghany County on the Chesapeake and Ohio Railway.
- Hemp-patch**; mount in Roanoke County.
- Hendricks Store**; post village in Bedford County.
- Henrico**; county situated in the central part of the State, lying in part in the Piedmont region and in part on the Atlantic plain, its southern boundary being formed by James River. The altitude ranges from 100 to 300 feet above sea level. Area, 273 square miles. Population, 30,062—white, 17,246; negro, 12,816; foreign born, 815. County seat, Richmond. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Atlantic Coast Line, the Chesapeake and Ohio, the Richmond, Frederick and Potomac, the Seaboard Air Line, and the Southern railroads.

**Henry**; cape, point of land in Princess Anne County, the southern point at the entrance to Chesapeake Bay.

**Henry**; county, situated in the southern part of the State in the Piedmont region. It has a rolling, broken surface. Area, 425 square miles. Population, 19,265—white, 10,881; negro, 8,383; foreign born, 16. County seat, Martinsville. The mean magnetic declination in 1900 was  $1^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Danville and Western and the Norfolk and Western railways.

**Hepners**; post village in Shenandoah County.

**Hera**; post village in Nottoway County.

**Herald**; post village in Wise County.

**Herbert**; post village in Princess Anne County.

**Hermitage**; post village in Augusta County on the Seaboard Air Line Railway.

**Hernando**; post village in Franklin County.

**Herndon**; town in Fairfax County. Population, 692.

**Herring**; canal in Norfolk County, connecting Dismal Swamp Canal with the Southern Branch of Elizabeth River.

**Hewlett**; post village in Hanover County.

**Hick**; creek, a small left-hand branch of Middle Fork of Holston River in Smyth County.

**Hickman**; village in Franklin County.

**Hickory**; creek, a small left-hand tributary to James River in Nelson County.

**Hickory**; creek, a small left-hand tributary to York River in Louisa County.

**Hickory**; post village in Norfolk County.

**Hickorygrove**; post village in Prince William County.

**Hicks Store**; post village in Spotsylvania County.

**Hicksville**; post village in Bland County.

**Hicks Wharf**; post village in Mathews County.

**Higgins**; post village in Grayson County.

**High**; bridge across Appomattox River between Prince Edward and Cumberland counties.

**High Cock**; summit in Bedford County.

**Highco Mountain**; summit in the Blue Ridge. Elevation, 2,880 feet.

**Highgate**; post village in Surry County.

**Highhill**; post village in Halifax County.

**High Knob**; summit in the Blue Ridge in Rockingham County.

**High Knob**; summit in Wise County. Elevation, 4,188 feet.

**High Knob**; summit in Warren County. Elevation, 2,385 feet.

**Highland**; county, situated in the northwestern part of the State in the Appalachian Valley. The surface consists of an alternation of sandstone ridges and limestone valleys, drained by tributaries to James River. Altitude ranges from 1,800 up to over 4,000 feet. Area, 407 square miles. Population, 5,647—white, 5,269; negro, 378; foreign born, 5. County seat, Monterey. The mean magnetic declination in 1900 was  $2^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $45^{\circ}$  to  $50^{\circ}$ .

**Highland Springs**; post village in Henrico County.

**Highpeak**; post village in Franklin County.

**High Point**; summit in Bath County. Altitude, 3,318 feet.

**High Point**; summit in Sugar Run Mountain. Elevation, 3,910 feet.

**High Rock**; summit in Walker Mountain. Elevation, 3,837 feet.

**High Rocks**; summits in Wythe County. Elevation from 3,000 to 3,660 feet.

**High Top**; summit in Montgomery County. Elevation, 2,690 feet.

**Hightown**; post village in Highland County.

**Hilda**; post village in Sussex County on the Southern Railway.

**Hildebrand**; post village in Augusta County.



- Hillandale**; post village in Charlotte County.  
**Hillcroft**; post village in Charlotte County.  
**Hillgrove**; post village in Pittsylvania County.  
**Hills**; creek, a small left-hand tributary to Roanoke River in Campbell County.  
**Hillsboro**; town in Loudoun County. Population, 131.  
**Hill Station**; post village in Scott County.  
**Hillsville**; county seat of Carroll County. Altitude, 2,570 feet.  
**Hilo**; post village in Augusta County.  
**Hilton**; ford of North Fork of Holston River, near Fido, in Scott County.  
**Hiltons**; post village in Scott County on the Virginia and Southwestern Railway.  
**Hinckle**; post village in Frederick County.  
**Hines**; small left-hand branch of Clinch River in Tazewell County.  
**Hinesville**; post village in Pittsylvania County.  
**Hinnom**; post village in Westmoreland County.  
**Hinton**; post village in Rockingham County.  
**Hitch**; post village in Fauquier County.  
**Hitchcock**; post village in Greenville County.  
**Hitesburg**; post village in Halifax County.  
**Hively**; post village in Bath County.  
**Hixburg**; post village in Appomattox County.  
**Hoadly**; post village in Prince William County.  
**Hobson**; post village in Nansemond County.  
**Hockman**; post village in Tazewell County on the Norfolk and Western Railway.  
**Hodges Draft**; small left-hand tributary to James River in Augusta County.  
**Hodges Ferry**; post village in Norfolk County on the Southern Railway.  
**Hog**; creek, a small left-hand tributary to James River in Albemarle County.  
**Hog Back**; mountains in Loudoun County. Elevation, 500 feet.  
**Hog Back**; summit in Little North Mountain. Elevation, 3,000 feet.  
**Hoges Store**; post village in Giles County.  
**Hog Pen Mountain**; summit in Rockingham County. Elevation, 2,000 feet.  
**Hogthief**; creek, a small right-hand branch of Middle Holston River in Washington County.  
**Hogtrough**; creek, a small left-hand branch of South Fork of Holston River in Smyth County.  
**Hogue**; creek, a small right-hand tributary to Potomac River in Frederick County.  
**Holcombs Rock**; post village in Bedford County on the Chesapeake and Ohio Railway. Altitude, 563 feet.  
**Holdcroft**; post village in Charles City County.  
**Holiday**; creek, a small left-hand branch of Appomattox River in Appomattox County.  
**Holladay**; post village in Spottsylvania County.  
**Holland**; town in Nansemond County on the Southern Railway. Population, 133.  
**Hollins**; post village in Roanoke County on the Norfolk and Western Railway.  
**Hollow**; run, a small left-hand tributary to Shenandoah River in Shenandoah County.  
**Holly**; creek, a small left-hand tributary to Russell Fork, rising in Dickenson County.  
**Holly**; post village in Chesterfield County.  
**Hollybrook**; post village in Bland County.  
**Hollydale**; post village in Lunenburg County.  
**Hollywood**; post village in Appomattox County.  
**Holmans**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.  
**Holmes**; run, a small right-hand tributary to Potomac River in Fairfax County.  
**Holmhead**; post village in Fluvanna County.

**Holstein Mills;** village in Smyth County.

**Holston;** mountains in Washington County. Elevation, 2,000 to 3,000 feet.

**Holston;** post village in Washington County on the Norfolk and Western Railway.

**Holston;** river formed by three forks in Wythe County, and flowing southwest into Tennessee River. Drainage area, 3,790 square miles; discharge, 1,000 cubic feet per second.

**Holston Bridge;** post village in Scott County.

**Holts;** branch, a small right-hand tributary to James River in Appomattox County.

**Homade;** post village in Dickinson County.

**Home;** creek, a small right-hand branch of Levisa Fork, rising in Buchanan County.

**Homeland;** post village in Culpeper County.

**Homer;** post village in Russell County.

**Homeville;** post village in Sussex County.

**Homewood;** post village in Surry County.

**Honaker;** small left-hand branch of New River in Pulaski County.

**Honaker;** town in Russell County on the Norfolk and Western Railway. Altitude, 1,900 feet. Population, 295.

**Hone Quarry;** mountains in Rockingham County.

**Hone Quarry;** run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Honeyville;** post village in Page County.

**Hood;** post village in Madison County.

**Hooes;** post village in King George County.

**Hoover;** post village in Rockingham County.

**Hoover Camp;** small right-hand branch of Knox Creek in Buchanan County.

**Hopeful;** post village in Louisa County.

**Hope Mills;** village in Page County.

**Hopeside;** post village in Northumberland County.

**Hopeton;** post village in Accomac County.

**Hopeville;** post village in Greenville County.

**Hopkins;** creek, a small left-hand tributary to Roanoke River in Bedford County.

**Hopkins;** post village in Accomac County.

**Hoppen;** run, a small left-hand branch of Rappahannock River in Fauquier County.

**Hopper;** village in Henry County.

**Hopyard;** post village in King George County.

**Horeb;** post village in Bedford County.

**Horn;** ford in Back Creek, a right-hand tributary to Roanoke River in Roanoke County.

**Horners;** post village in Westmoreland County.

**Horns;** small left-hand branch of Cripple Creek in Wythe and Smyth counties.

**Horntown;** post village in Accomac County.

**Horse;** mountains in Alleghany County. Elevation, 2,000 to 2,500 feet.

**Horseleys;** creek, a small left-hand tributary to James River in Amherst County.

**Horse Pasture;** post village in Henry County.

**Horsepen;** cove in Big Stone Ridge in Tazewell County.

**Horsepen;** creek, a small left-hand tributary to Nottoway River in Nottoway County.

**Horsepen;** creek, a small right-hand tributary to Appomattox River in Amelia County.

**Horsepen;** post village in Tazewell County.

**Horsepen;** small right-hand branch of Appomattox River in Amelia County.

**Horse Pen Mountain;** summit in the western part of Bedford County.

**Horseshoe;** mountains in Nelson County. Elevation, 1,500 to 2,000 feet.

**Horse Swamp;** creek, a small right-hand branch of Chickahominy River in Henrico County.

**Horsey;** post village in Accomac County.

**Hortons**; summit in Scott County.

**Hortons Summit**; post village in Scott County on the Virginia and Southwestern Railroad.

**Hot Springs**; post village in Bath County on the Chesapeake and Ohio Railway. Altitude, 2,195 feet.

**Hough**; creek, a small left-hand branch of Rappahannock River in King George County.

**House and Barn**; mountain in Russell County. Altitude, 3,450 feet.

**Houston**; county seat of Halifax County on the Norfolk and Western Railway. Altitude, 1,345 feet. Population, 687.

**Howard**; creek, a small right-hand tributary to York River in Hanover County.

**Howards**; ferry over New River in Pulaski County.

**Howardsville**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Howell**; post village in Patrick County.

**Howells**; gap in Weaver Knob.

**Howertons**; post village in Essex County.

**Howerys**; post village in Floyd County.

**Howlett**; post village in Appomattox County.

**Hubard**; post village in Buckingham County on the Chesapeake and Ohio Railway.

**Hubbard**; run, a small right-hand branch of Rappahannock River in Culpeper County.

**Hubbard Springs**; post village in Lee County on the Chesapeake and Ohio Railway.

**Huckleberry Mountain**; summit in Rockingham County.

**Huddle**; creek, a small right-hand branch of Cripple Creek in Wythe County.

**Huddleston**; post village in Alleghany County.

**Hudgins**; post village in Mathews County.

**Hudson**; creek, a small left-hand tributary to Shenandoah River in Augusta County.

**Hudson**; creek, a small right-hand tributary to York River in Louisa County.

**Hudson Mill**; post village in Culpeper County.

**Huffman**; post village in Craig County.

**Huffman Knob**; summit in Carroll County.

**Huffville**; post village in Floyd County.

**Hugh**; post village in Charlotte County.

**Hughart**; run, a small left-hand tributary to James River in Augusta County.

**Hughes**; creek, a small right-hand branch of Jackson River in Bath County.

**Hughes**; creek, a small right-hand tributary to James River in Bath County.

**Hughes**; river, a small right-hand tributary to Rappahannock River in Rappahannock County.

**Hughes River**; post village in Rappahannock County.

**Hughesville**; post village in Loudoun County.

**Huguenot**; post village in Powhatan County.

**Huguenot**; springs in Powhatan County.

**Hull**; post village in Highland County.

**Hume**; post village in Fauquier County.

**Humpback**; summit in Nelson County. Elevation, 3,645 feet.

**Hundley Springs**; post village in Appomattox County.

**Hungary**; creek, a small right-hand tributary to Chickahominy River in Henrico County.

**Hungary Town**; summit in Lunenburg County. Elevation, 490 feet.

**Hungry**; run, a small right-hand tributary to Potomac River in Loudoun County.

**Hungry Hollow**; creek, a small right-hand tributary to Middle Fork of Holston River.

- Hungry Mother**; creek, a small right-hand branch of Middle Fork of Holston River in Smyth County.
- Hunter**; gap in Powell Mountain in Lee County.
- Hunter**; valley lying between Stone Mountain and Chestnut Ridge in Scott County.
- Hunter Hall**; post village in Franklin County.
- Hunters Lodge**; post village in Fluvanna County.
- Hunters Mills**; post village in Fairfax County.
- Hunting**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Hunting**; creek, a small right-hand branch of James River in Bedford County.
- Hunting**; run, a small right-hand tributary to Rappahannock River in Spotsylvania County.
- Hunting Camp**; creek, a small left-hand tributary to Wolf Creek, rising in Bland County.
- Hunts**; creek, a small right-hand tributary to James River in Buckingham County.
- Huon**; post village in Louisa County.
- Hupp**; village in Rockingham County.
- Hurley**; post village in Buchanan County.
- Hurricane**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.
- Hurricane**; small left-hand branch of Nottoway River in Nottoway County.
- Hurricane**; creek, a small right-hand tributary to Russell Fork, rising in Buchanan County.
- Hurricane**; fork, a small right-hand tributary to Clinch River, rising in Russell County.
- Hurt**; post village in Pittsylvania County on the Southern Railway.
- Hurtsville**; post village in Appomattox County.
- Hutchison Rock**; summit in Clinch Mountain. Altitude, 4,724 feet.
- Hutton**; creek, a small left-hand branch of Middle Fork of Holston River in Smyth County.
- Huttons**; small right-hand branch of Middle Fork of Holston River in Washington County.
- Hyacinth**; post village in Northumberland County.
- Hybla**; post village in King William County.
- Hyc**; post village in Halifax County.
- Hycotee**; small right-hand branch of Dan River in Halifax County.
- Hydraulic**; post village in Albemarle County.
- Hylas**; post village in Hanover County.
- Hyters Gap**; post village in Washington County.
- Iberis**; post village in Lancaster County.
- Ibex**; post village in Dickenson County.
- Ida**; post village in Page County.
- Ideal**; post village in Caroline County.
- Idem**; post village in Amherst County.
- Igo**; post village in King George County.
- Ids**; village in Fairfax County.
- Inca**; post village in Mecklenburg County.
- Inch**; branch, a small right-hand tributary to Shenandoah River in Augusta County.
- Independence**; county seat of Grayson County.
- Independent Hill**; post village in Prince William County.
- Index**; post village in King George County.
- Indian**; creek, a small left-hand branch of Pound River in Wise County.
- Indian**; creek, a small left-hand tributary to James River in Amherst County.
- Indian**; creek, a small right-hand branch of Clinch River, rising in Tazewell County.

**Indian**, creek, a small right-hand branch of Powell River, rising in Lee County and flowing south into Powell River.

**Indian**; creek, a small right-hand branch of Roanoke River in Franklin County.

**Indian**; creek, a small right-hand branch of Russell Fork, rising in Dickenson County.

**Indian**; creek, a small right-hand tributary to New River, rising in Floyd County.

**Indian**; creek, a small right-hand tributary to York River in Louisa County.

**Indiancreek**; post village in Norfolk County.

**Indian Draft**; small left-hand tributary to James River in Bath County.

**Indian Draft**; small right-hand branch of Jackson River in Alleghany County.

**Indianneck**; post village in King and Queen County.

**Indian Ridge**; mountains in Floyd and Carroll counties. Elevation, 3,000 feet.

**Indianrock**; post village in Botetourt County.

**Indiantown**; post village in Orange County.

**Indian Valley**; post village in Floyd County.

**Indika**; post village in Isle of Wight County.

**Inez**; post village in Louisa County.

**Inge**; post village in Lunenburg County.

**Ingle**; post village in Pulaski County.

**Ingles**; ferry over New River in Pulaski County.

**Ingles**; mountains in Pulaski County.

**Ingram**; post village in Halifax County.

**Inlet**; post village in Culpeper County on the Southern Railway.

**Inman**; post village in Wise County on the Virginia and Southwestern Railway.

**Ino**; post village in King and Queen County.

**Interior**; post village in Giles County on the Big Stony Railway.

**Invermay**; post village in Mecklenburg County.

**Ionia**; post village in Dinwiddie County.

**Irville**; post village in Essex County.

**Irby**; post village in Nottoway County.

**Irene**; post village in Loudoun County.

**Irisburg**; post village in Henry County.

**Irish**; creek, a small left-hand tributary to James River in Rockbridge County.

**Irish**; gap in South Mountains, caused by Irish Creek, in Rockbridge County.

**Irishcreek**; post village in Rockbridge County.

**Iron**; mountain in Alleghany County.

**Iron**; mountains extending from Washington County to Wythe County. Elevation, 3,000 to 4,000 feet.

**Iron Gate**; gap in Patch Mountains, through which flows Jackson River, in Alleghany County.

**Irongate**; town in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 1,019 feet. Population, 392.

**Iron Hill**; springs in Alleghany County.

**Ironside**; village in Henry County.

**Irvey Notch**; gap in Garden Mountain in Botetourt County.

**Irvington**; post village in Lancaster County.

**Irwin**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Isaac**; creek, a small right-hand tributary to Potomac River in Frederick County.

**Isaac**; post village in Southampton County.

**Isabel**; post village in Culpeper County.

**Isham**; post village in Lunenburg County.

**Isis**; post village in Scott County.

**Island**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Island;** creek, a small right-hand tributary to New River in Carroll County.

**Island;** ford of Jackson River in Alleghany County.

**Island;** post village in Goochland County.

**Islandford;** post village in Rockingham County.

**Isle of Wight;** county, situated in the southeastern part of the State, fronting on the south bank of James River near its mouth. The surface is level and but little elevated above tide. Area, 352 square miles. Population, 13,102—white 6,833; negro, 6,268; foreign born, 35. County seat, Isle of Wight. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western and the Seaboard and Roanoke railways.

**Isle of Wight;** county seat of Isle of Wight County.

**Israel Mountain;** summit in Albemarle County. Elevation, 1,000 feet.

**Issequena;** post village in Goochland County.

**Itata;** post village in Surry County.

**Ivanhoe;** post village in Wythe County on the Norfolk and Western Railway.

**Ivondale;** post village in Richmond County.

**Ivor;** post village in Southampton County on the Norfolk and Western Railway.

**Ivy;** creek, a small left-hand tributary to James River in Nelson County.

**Ivy;** creek, a small right-hand branch of James River in Bedford and Campbell counties.

**Ivy Depot;** post village in Albemarle County on the Chesapeake and Ohio Railway. Altitude 545 feet.

**Ivyview;** post village in Halifax County.

**Jack;** mountains in Highland County, extending into Pendleton County, W. Va. Elevation, 3,500 to 4,000 feet.

**Jacks;** branch, a small left-hand tributary to Nottoway River in Nottoway County.

**Jacks Hill;** summit in Nelson County.

**Jacks Mill;** post village in Floyd County.

**Jackson;** ferry in New River at Jackson in Wythe County.

**Jackson;** post village in Louisa County on the Chesapeake and Ohio Railway. Altitude, 845 feet.

**Jackson;** river, a head branch of James River, which has its source in North Mountain and flows in a generally southward course to its junction with the James.

**Jacksondale;** post village in Princess Anne County on the Norfolk and Southern Railroad.

**Jacobsville;** post village in Pittsylvania County.

**Jadwyn;** post village in Shenandoah County.

**Jamaica;** post village in Middlesex County.

**James;** river, formed by two forks, North and South, which head in North Mountain on the west side of the valley of Virginia, and crossing the Valley in a circuitous course passes the Blue Ridge through a gap a few miles above Lynchburg, thence in a generally easterly course it flows into Chesapeake Bay through Hampton Roads; drainage area, 9,684 square miles; mean discharge, 1,854 (Buchanan, Va.); navigable to Richmond.

**James City;** county, situated on the Atlantic plain between York and James rivers, in the eastern part of the State. The surface is low and level, and little elevated. Area, 159 square miles. Population, 3,688—white, 1,346; negro, 2,342; foreign born, 58. County seat, Williamsburg. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**James River;** post village in Amherst County.

- James Store**; post village in Gloucester County.
- Jamestown**; bridge across Appomattox River between Prince Edward and Cumberland counties.
- Jamestown**; post village in James City County.
- Jamesville**; post village in Northampton County.
- Jane**; post village in Dickenson County.
- Jap**; post village in Lee County.
- Jar**; post village in Buckingham County.
- Jarman**; gap in the Blue Ridge in Augusta County.
- Jarratt**; post village in Sussex County.
- Jasper**; post village in Lee County on the Virginia and Southwestern Railway.
- Jasper Mountain**; summit in Pittsylvania County. Elevation, 1,000 feet.
- Jefferson**; post village in Powhatan County.
- Jeffersonton**; post village in Culpeper County.
- Jeffress**; post village in Mecklenburg County on the Southern Railway.
- Jeffries**; branch, a small right-hand tributary to Potomac River in Loudoun County.
- Jeffs**; post village in York County.
- Jelico**; post village in Buchanan County.
- Jenkings**; branch, a small left-hand tributary to Shenandoah River in Augusta County.
- Jenkins**; gap in Crawford Mountain, caused by Jenkins Branch, in Augusta County.
- Jenkins Bridge**; post village in Accomac County.
- Jennings**; creek, a small right-hand tributary to James River in Botetourt County.
- Jennings Gap**; post village in Augusta County.
- Jennings Mountain**; summit in Amherst County.
- Jennings Ordinary**; post village in Nottoway County.
- Jeremiah**; run, a small right-hand tributary to Shenandoah River in Page County.
- Jericho**; canal connecting Drummond Lake with Suffolk in Nansemond and Norfolk counties.
- Jerkentight**; creek, a small left-hand tributary to James River in Bath County.
- Jerome**; post village in Shenandoah County.
- Jerry**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Jesses Mill**; creek, a small left-hand branch of Clinch River, rising in Russell County.
- Jeter**; post village in Bedford County.
- Jetersville**; post village in Amelia County on the Southern Railway.
- Jetts**; creek, a small left-hand branch of King George County.
- Jetts**; post village in Greenville County.
- Jewell Ridge**; mountains in Buchanan County.
- Jimbo**; post village in Bedford County.
- Joe**; creek, a small left-hand tributary to James River in Nelson County.
- Joe**; post village in Buchanan County.
- Joel**; small right-hand branch of Slate Creek in Buchanan County.
- Joel**; village in Franklin County.
- Joes**; creek, a small left-hand tributary to Shenandoah River in Rockingham County.
- John**; creek, a small right-hand tributary to Chickahominy River in Henrico County.
- John**; village in Russell County.
- John**; run, a small right-hand tributary to Shenandoah River in Augusta County.
- Johns**; creek, a right-hand tributary to James River in Craig County.
- Johns**; creek, a small right-hand tributary to Jackson River in Craig County.
- Johns**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Johns Creek**; mountains in Giles and Craig counties. Elevation, 3,000 to 3,500 feet.
- Johnson**; creek, a small left-hand tributary to Yadkin River in Patrick County.
- Johnson**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Johnson**; post village in Scott County.

**Johnson**; run, a small right-hand tributary to Potomac River in Frederick County.

**Johnson Creek**; post village in Patrick County.

**Johnson Mountain**; summit in Bedford County. Altitude, 1,375 feet.

**Johnsons Springs**; post village in Goochland County.

**Jonas**; run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Jones**; small right-hand branch of Opossum Creek in Scott County.

**Jones**; creek, a small right-hand branch of James River in Powhatan County.

**Jones**; creek, a small right-hand branch of North Fork of Powell River in Lee County.

**Jones**; fork, a small right-hand tributary to Levisa Fork in Buchanan County.

**Jones**; neck of land nearly inclosed by a bend in James River in Chesterfield County.

**Jones**; post village in Halifax County.

**Jonesboro**; post village in Brunswick County.

**Jones Hole**; small swamp in Prince George and Sussex counties.

**Jonesville**; county seat of Lee County.

**Jonican**; branch, a small left-hand tributary to James River in Charlotte and Appomattox counties.

**Joplin**; post village in Wise County.

**Jordan**; river, a small right-hand tributary to Rappahannock River in Rappahannock County.

**Jordan Springs**; post village in Frederick County.

**Jordans Store**; post village in Powhatan County.

**Jorgensen**; post village in Lunenburg County.

**Joseph**; post village in Pittsylvania County.

**Joshua**; creek, a small right-hand tributary to James River in Buckingham County.

**Joyceville**; post village in Mecklenburg County.

**Judd**; branch, a small right-hand tributary to Appomattox River in Amelia County.

**Judd**; post village in Brunswick County.

**Judge**; post village in Dickenson County.

**Judith**; creek, a small right-hand branch of James River in Bedford County.

**Jump**; mountains in Rockbridge County. Elevation, 2,500 feet.

**Jump**; post village in Rockbridge County.

**Jumping**; run, a small left-hand branch of Roanoke River in Bedford County.

**Jump Rock**; summit in Rockbridge County. Elevation, 3,190 feet.

**Junta**; village in Franklin County.

**Just**; post village in Lee County.

**Justisville**; post village in Accomac County.

**Ka**; post village in Scott County.

**Kadesh**; village in Pittsylvania County.

**Kara**; post village in Lunenburg County.

**Karl**; post village in Appomattox County.

**Kasey**; post village in Bedford County.

**Kate**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Katie**; small right-hand branch of Maiden Spring Creek, a tributary to Clinch River, rising in Tazewell County.

**Kays**; run, a small left-hand branch of Rappahannock River in King George County.

**Keats**; post village in Mecklenburg County.

**Keeling**; post village in Pittsylvania County.

**Keen**; mountains in Buchanan County. Elevation, 2,500 feet.

**Keene**; post village in Albemarle County.

**Keezletown**; post village in Rockingham County on the Chesapeake Western Railway.



**Keller**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Kelley**; mountains in Augusta County. Elevation, 2,000 to 3,000 feet.

**Kellys Ford**; post village in Culpeper County.

**Kelso**; village in Bedford County.

**Kempis**; post village in Amelia County.

**Kempsville**; post village in Princess Anne County on the Norfolk and Southern Railroad.

**Kendallgrove**; post village in Northampton County on the New York, Philadelphia and Norfolk Railroad.

**Kenmore**; post village in Fairfax County.

**Kennedy**; creek, a small right-hand tributary to Shenandoah River in Augusta County.

**Kennett**; post village in Franklin County.

**Kent**; branch, a small left-hand tributary to James River in Fluvanna County.

**Kent Ridge**; mountains in Russell and Tazewell counties. Elevation, 2,500 feet.

**Kents Store**; post village in Fluvanna County.

**Kentuck**; post village in Pittsylvania County.

**Kenwood**; station in Hanover County on the Richmond, Fredericksburg, and Potomac Railroad.

**Kepheart**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Kerfoot**; post village in Fauquier County.

**Kerns**; mountains in Shenandoah County. Elevation, 1,500 to 3,000 feet.

**Kernstown**; post village in Frederick County on the Baltimore and Ohio Railroad. Altitude, 744 feet.

**Kerrs**; creek, a small left-hand tributary to James River in Rockbridge County.

**Kerrs Creek**; post village in Rockbridge County.

**Keswick**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Ketron**; post village in Washington County.

**Kettle**; run, a small right-hand tributary to Potomac River in Prince William County.

**Kew**; post village in Campbell County.

**Keysville**; town in Charlotte County on the Southern Railway. Altitude, 628 feet. Population, 82.

**Kibler**; post village in Patrick County.

**Kidd**; post village in Albemarle County.

**Kilmarnock**; post village in Lancaster County.

**Kimball**; post village in Page County on the Norfolk and Western Railway. Altitude, 892 feet.

**Kimballton**; post village in Giles County on the Big Stony Railway.

**Kimberling**; creek, a small left-hand branch of Walker Creek in Bland County.

**Kimberling**; creek, a small right-hand tributary to Walker Creek, rising in Bland County.

**Kimberling**; post village in Bland County.

**Kimberling**; springs in Bland County.

**Kinderwood**; post village in Lunenburg County.

**Kindrick**; post village in Grayson County.

**King and Queen**; county, situated in the central part of the State on the Atlantic plain. The surface is level and but little elevated above tide. Area, 336 square miles. Population, 9,265—white, 4,006; negro, 5,259; foreign born, 2. County seat, King and Queen. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 45 to 50 inches, and the temperature 55° to 60°.

**King and Queen**; county seat of King and Queen County.

**King George;** county, situated in the eastern part of the State, lying on the south side of Potomac River on the Atlantic plain. The surface is rolling and but little elevated above tide. Area, 183 square miles. Population, 6,918—white, 3,596; negro, 3,322; foreign born, 22. County seat, King George. The mean magnetic declination in 1900 was  $4^{\circ} 15'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ .

**King George;** county seat of King George County.

**Kings Hill;** summit in Augusta County.

**Kingsland;** creek, a small right-hand branch of James River in Chesterfield County.

**Kings Mill;** post village in Washington County.

**King William;** county, situated in the central part of the State on the Atlantic plain. It has a level surface, but little elevated. Area, 246 square miles. Population, 8,380—white, 3,266; negro, 4,962; foreign born, 35. County seat, King William. The mean magnetic declination in 1900 was  $3^{\circ} 36'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern Railway.

**King William;** county seat of King William County.

**Kinsale;** post village in Westmoreland County.

**Kinser;** creek, a small left-hand branch of Cripple Creek in Wythe County.

**Kioak;** post village in Lee County.

**Kipling;** post village in Grayson County.

**Kiracofe;** post village in Augusta County.

**Kirk;** post village in Lee County.

**Knightly;** post village in Augusta County.

**Knob;** fork, a small right-hand branch of New River in Grayson County.

**Knob;** post village in Tazewell County.

**Knob;** summit in Botetourt County.

**Knob;** summit in Rockbridge County. Elevation, 2,000 feet.

**Knolls;** post village in Campbell County.

**Knopf;** post village in Caroline County.

**Koiners Store;** post village in Augusta County.

**Kola;** post village in Patrick County.

**Kopp;** post village in Prince William County.

**Korea;** post village in Culpeper County.

**Koakoo;** post village in Southampton County.

**Kounts;** post village in Page County.

**Kruger;** post village in Prince George County.

**Kunath;** post village in Lunenburg County.

**Kyle;** village in Botetourt County.

**Laban;** post village in Mathews County.

**Lacey Spring;** post village in Rockingham County.

**Lackey;** post village in York County.

**Laconia;** post village in Charlotte County.

**Lacrosse;** post village in Mecklenburg County on the Seaboard Air Line and the Southern railways.

**Lacy;** post village in Pittsylvania County.

**Ladd;** village in Augusta County.

**Lafayette;** post village in Montgomery County on the Potomac, Fredericksburg and Piedmont Railroad.

**Lagrange;** post village in Culpeper County on the Chesapeake and Ohio Railway. Altitude, 1,618 feet.

**Lahore;** post village in Orange County.

**Laird;** post village in Dinwiddie County.

**Laird Knob;** summit in Massanutten Mountain.

**Lakeview**; post village in Clarke County.

**Lakota**; post village in Culpeper County.

**Lamb**; creek, a small left-hand branch of Rappahannock River in King George County.

**Lamb**; post village in Greene County.

**Lambert**; post village in Mecklenburg County.

**Lambsburg**; post village in Carroll County.

**Lamont**; post village in Smyth County.

**Lancaster**; county, situated in the eastern part of the State on the north side of Rappahannock River and on the north and west shores of Chesapeake Bay. Its surface is level, and but little elevated above tide. Area, 137 square miles. Population, 8,949—white, 4,058; negro, 4,891; foreign born, 25. County seat, Lancaster. The mean magnetic declination in 1900 was 4° 39'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.

**Lancaster**; county seat of Lancaster County.

**Lance**; post village in Stafford County.

**Land**; post village in Princess Anne County on the Norfolk and Southern Railroad.

**Landis**; post village in Augusta County.

**Landmark**; post village in Fauquier County.

**Land of Promise**; post village in Princess Anne County.

**Landsdown**; post village in Prince William County.

**Lanesville**; post village in King William County.

**Laneview**; post village in Essex County.

**Lanexa**; post village in New Kent County on the Chesapeake and Ohio Railway.

**Langley**; post village in Fairfax County.

**Lantana**; post village in Goochland County.

**Lantz Mills**; post village in Shenandoah County.

**Lapsley**; run, a small right-hand tributary to James River in Botetourt County.

**Lara**; post village in Northumberland County.

**Lasley**; post village in Louisa County.

**Lassiter**; post village in Goochland County.

**Latona**; village in Rockingham County.

**Laughon**; village in Bedford County.

**Laurel**; branch, a small right-hand tributary to Jackson River in Alleghany County.

**Laurel**; small right-hand branch of Knox Creek in Buchanan County.

**Laurel**; creek, a small left-hand tributary to South Fork of Holston River in Washington County.

**Laurel**; creek, a small left-hand tributary to Wolf Creek, rising in Bland County.

**Laurel**; creek, a small right-hand tributary to Roanoke River in Roanoke County.

**Laurel**; creek, a small right-hand tributary to New River, rising in Floyd County and flowing into Pulaski County.

**Laurel**; creek, a small right-hand tributary to James River in Alleghany County.

**Laurel**; creek, a small right-hand branch of Wolf Creek in Bland County.

**Laurel**; small creek tributary to North Fork of Holston River, rising in Tazewell County.

**Laurel**; creek, a small tributary to Bluestone River in Tazewell County.

**Laurel**; creek, a small right-hand branch of North Fork of Holston River, rising in Tazewell County.

**Laurel**; fork, a small left-hand branch of North Fork of Potomac River in Highland County.

**Laurel**; fork, a small right-hand tributary to Clinch River in Scott County.

**Laurel**; fork, a small right-hand tributary to Dry Fork, rising in Tazewell County.

**Laurel**; fork, a small right-hand tributary to New River in Carroll County.

**Laurel**; fork, a small right-hand branch of Pigeon Creek in Wise County.

**Laurel**; run, a small left-hand tributary to James River in Rockbridge County.

**Laurelfork**; post village in Carroll County.

**Laurelgrove**; post village in Pittsylvania County.

**Laurelhill**; post village in Augusta County.

**Laurel Hollow**; branch, a small right-hand branch of Little Walker Creek in Pulaski County.

**Laurel Mills**; post village in Rappahannock County.

**Laurel Ridge**; mountains in Montgomery County.

**Laurel Shorts**; creek, a small right-hand tributary to New River in Carroll County.

**Lawford**; post village in Buckingham County.

**Lawrenceville**; county seat of Brunswick County on the Southern Railway. Population, 760.

**Lawton**; post village in Giles County.

**Lawyers**; post village in Campbell County.

**Layman**; post village in Craig County.

**Layton**; post village in Essex County.

**Leader**; post village in Chesterfield County.

**Leaf**; post village in Scott County.

**Leah**; post village in Floyd County.

**Leaksville**; post village in Page County on the Danville and Western Railway.

**Leatherwood**; post village in Henry County.

**Leavells**; post village in Spottsylvania County on the Atlantic and Danville Railroad.

**Lebanon**; county seat of Russell County. Population, 325. Altitude, 2,131 feet.

**Lebanon Church**; post village in Shenandoah County.

**Leck**; post village in Dickenson County.

**Leda**; post village in Halifax County.

**Ledbetter**; creek, a small left-hand branch of Meherrin River in Lunenburg County.

**Lee**; county, situated in the southwestern part of the State, having for its northern boundary the escarpment of the Cumberland Plateau, which here forms the State line with Kentucky. Its southern line is the boundary of Tennessee. Its surface consists mainly in an alternation of short parallel ridges of sandstone and narrow valleys filled with limestone. It is drained by Powell River. Area, 433 square miles. Population, 19,856—white, 19,116; negro, 740; foreign born, 17. County seat, Jonesville. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Louisville and Nashville Railroad.

**Lee**; creek, a small right-hand tributary to Appomattox River in Nottoway County.

**Lee**; creek, a small right-hand tributary to James River in Botetourt County.

**Lee**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Leeds**; post village in Amherst County.

**Leedstown**; post village in Westmoreland County.

**Leehall**; post village in Warwick County on the Chesapeake and Ohio Railway.

**Lee Mill**; pond in Prince George County at the mouth of Warwick Swamp.

**Leeland**; post village in Stafford County.

**Leemont**; post village in Accomac County.

**Lee Mountain**; summit in Botetourt County.

**Leesburg**; county seat of Loudoun County on the Southern Railway. Population, 1,513.

**Lees Mills**; post village in Washington County.

**Leesville**; post village in Campbell County.

**Left Crab Orchard**; creek, a small right-hand tributary to North Fork of Powell River.

**Legato**; post village in Fairfax County.

**Legg**; post village in Wise County on the Interstate Railroad.

- Leigh**; mountain in Prince Edward County. Elevation, 715 feet.  
**Leighs**; post village in Fairfax County.  
**Leithton**; post village in Loudoun County.  
**Lelia**; post village in Floyd County.  
**Lemar**; post village in Franklin County.  
**Lemons**; run, a small left-hand tributary to Roanoke River in Botetourt County.  
**Lenah**; post village in Loudoun County.  
**Lennie**; village in Lee County.  
**Lennig**; post village in Halifax County.  
**Lenore**; post village in Frederick County.  
**Lent**; post village in Caroline County.  
**Leon**; post village in Madison County.  
**Leonis**; village in Fluvanna County.  
**Leplo**; village in Washington County.  
**Leslie**; post village in Roanoke County.  
**Lester Manor**; post village in King William County on the Southern Railway.  
**Lesters**; post village in Montgomery County.  
**Letcher**; post village in Bath County.  
**Levelrun**; post village in Pittsylvania County.  
**Levisa Fork**; river, tributary to Ohio River, formed by two forks, North and South, in Buchanan County, and flowing northwest into the Big Sandy.  
**Levy**; post village in Loudoun County.  
**Lew**; post village in Frederick County.  
**Lewinsville**; post village in Fairfax County.  
**Lewis**; creek, a small left-hand tributary to Shenandoah River in Augusta County.  
**Lewis**; creek, a small right hand tributary to Clinch River in Russell County.  
**Lewis**; run, a small left-hand branch of Shenandoah River in Clarke County.  
**Lewisetta**; post village in Northumberland County.  
**Lewiston**; post village in Spottsylvania County.  
**Lexington**; county seat of Rockbridge County on the Chesapeake and Ohio and the Baltimore and Ohio railroads. Altitude, 946 feet. Population, 3,203.  
**Libbie**; post village in Lee County.  
**Liberty Furnace**; post village in Shenandoah County.  
**Liberty Hill**; small branch of Maiden Spring Creek tributary to Clinch River in Tazewell County.  
**Liberty Hill**; summit in Tazewell County.  
**Liberty Mills**; post village in Orange County.  
**Lick**; branch, a small right-hand tributary to James River in Craig County.  
**Lick**; branch, a small left-hand tributary to Roanoke River in Bedford County.  
**Lick**; small right-hand branch of Knox Creek in Buchanan County.  
**Lick**; creek, a small right-hand branch of Clinch River, rising in Russell Fork.  
**Lick**; creek, a small right-hand tributary to Roanoke River in Floyd County.  
**Lick**; creek, a small right-hand tributary to New River in Montgomery County.  
**Lick**; creek, a small left-hand branch of Russell Fork, rising in Dickenson County.  
**Lick**; creek, a small right-hand branch of Russell Fork, rising in Buchanan County.  
**Lick**; creek, a small right-hand tributary to North Fork of Holston River, rising in Bland County.  
**Lick**; mountain in Bedford County. Elevation, 1,839 feet.  
**Lick**; mountain in Craig County.  
**Lick**; mountains in Alleghany County. Elevation, 2,000 to 2,990 feet.  
**Lick**; mountains in Wythe County. Elevation, 2,500 to 3,000 feet.  
**Lick**; run, a small left-hand tributary to Roanoke River in Bedford County.  
**Lick**; run, a small left-hand tributary to Shenandoah River in Frederick County.  
**Licking**; post village in Goochland County.

**Licking**; creek, a small right-hand tributary to James River in Chesterfield County.

**Licking**; run, a small right-hand tributary to Potomac River in Fauquier County.

**Lickinghole**; creek, a small left-hand branch of Chickahominy River in Hanover County.

**Lickinghole**; creek, a small left-hand tributary to James River in Albemarle County.

**Lick Log**; branch, a small right-hand tributary to Jackson River in Alleghany County.

**Lick Run**; ferry across Jackson River at Lick Run in Botetourt County.

**Lickrun**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 1,019 feet.

**Lieutenant**; creek, a small right-hand tributary to James River in Dinwiddie County.

**Lightfoot**; post village in York County.

**Lignite**; post village in Botetourt County.

**Lignum**; post village in Culpeper County.

**Lilburn**; post village in Powhatan County.

**Lilian**; post village in Northumberland County.

**Lilly**; village in Rockingham County.

**Limeton**; post village in Warren County.

**Limstrong**; post village in Prince William County.

**Lina**; post village in Dinwiddie County.

**Lincoln**; post village in Loudoun County.

**Lincolnia**; post village in Fairfax County.

**Lindell**; post village in Washington County.

**Linden**; post village in Warren County on the Southern Railway. Altitude, 916 feet.

**Lindsay**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Lindward**; post village in Charlotte County.

**Link**; post village in Norfolk County.

**Linkhorn**; bay, a lagoon in Princess Anne County, separated from the Atlantic Ocean by a sand bar.

**Linkous**; ferry over New River in Pulaski County.

**Linn Camp**; creek, a small right-hand branch of Levisa Fork, rising in Buchanan County.

**Linnville**; creek, a small left-hand tributary to Shenandoah River in Rockingham County.

**Linnville**; post village in Rockingham County on the Southern Railway. Altitude, 1,242 feet.

**Lippe**; post village in Wise County.

**Lipscomb**; post village in Augusta County on the Norfolk and Western Railway.

**Lipses**; run, a small right-hand tributary to James River in Botetourt County.

**Lisbon**; post village in Bedford County.

**Lithia**; post village in Botetourt County on the Norfolk and Western Railway. Altitude, 965 feet.

**Little**; creek, a small right-hand tributary to Appomattox River in Amelia and Nottoway counties.

**Little**; small creek in Princess Anne County.

**Little**; creek, a small branch of Wolf Creek in Tazewell County.

**Little**; creek, a small right-hand tributary to Roanoke River in Franklin County.

**Little**; mountain in Craig County. Elevation, 2,000 feet.

**Little**; mountains in Bath County. Elevation, 2,000 to 3,000 feet.

**Little**; mountains in Franklin County.

**Little**; mountains in Highland County. Elevation, 3,000 to 4,000 feet.

- Little**; river, a small left-hand tributary to Shenandoah River in Augusta County.
- Little**; river, a left-hand tributary to York River in Hanover County.
- Little**; river, a right-hand tributary to New River rising in Floyd County.
- Little**; river, a right-hand branch of New River in Montgomery County.
- Little**; river, a small right-hand tributary to Potomac River in Fauquier County.
- Little**; summit in Back Creek Mountain in Bath County.
- Little Back**; creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Little Back**; creek, a small left-hand tributary to James River in Bath County.
- Little Bear**; creek, a small right-hand tributary to Shenandoah River in Rockingham County.
- Little Beaver**; creek, a small right-hand branch of James River in Campbell County.
- Little Bottom**; creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Little Briery**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.
- Little Brush**; creek, a small left-hand tributary to New River in Carroll County.
- Little Brushy**; mountains in Smyth County. Elevation, 2,500 feet.
- Little Buffalo**; creek, a small right-hand branch of Appomattox River in Prince Edward County.
- Little Bull**; run, a small right-hand tributary to Roanoke River in Franklin County.
- Little Byrd**; creek, a small left-hand tributary to James River in Goochland County.
- Little Calf Pasture**; river, a small left-hand tributary to James River in Rockbridge and Augusta counties.
- Little Camp**; mountain in Rockbridge County. Elevation, 2,000 to 3,000 feet.
- Little Cast Steel**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Little Catawba**; creek, a small right-hand tributary to James River in Botetourt County.
- Little Cattail**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.
- Little Cattail**; creek, a small right-hand branch of Rowanty Creek.
- Little Cedar**; creek, a small left-hand tributary to Clinch River, rising in Russell County.
- Little Cobbler**; mountains in Fauquier County. Elevation, 750 to 1,000 feet.
- Little Cranberry**; creek, a small right-hand tributary to New River in Carroll County.
- Little Falling**; river, a small left-hand tributary to Roanoke River in Campbell County.
- Little Fox**; creek, a small right-hand tributary to New River in Grayson County.
- Little Fox**; creek, a small right-hand tributary to Russell Fork, rising in Buchanan County.
- Little George**; creek, a small right-hand branch of James River in Buckingham County.
- Little Guinea**; creek, a small left-hand branch of Appomattox River in Cumberland County.
- Little Hound**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.
- Little House Mountain**; summit in Rockbridge County. Elevation, 3,410 feet.
- Little Hunting**; creek, a small right-hand branch of Potomac River in Fairfax County.

**Little Indian;** creek, a small left-hand tributary to Clinch River, rising in Russell County.

**Little Indian;** creek, a small right-hand tributary to New River in Floyd County.

**Little Indian;** run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Little Isaac;** creek, a small right-hand tributary to Potomac River in Frederick County.

**Little Laurel;** creek, a small right-hand tributary to New River in Pulaski County.

**Little Lickinghole;** creek, a small left-hand tributary to James River in Goochland County.

**Little Lynville;** creek, a small right-hand tributary to Roanoke River in Franklin County.

**Little Mack;** creek, a small right-hand tributary to New River in Pulaski County.

**Little Mare;** mountains in Bath County.

**Little Mary;** creek, a small left-hand tributary to James River in Rockbridge County.

**Little Middle;** mountains in Bath and Alleghany counties.

**Little Mill;** creek, a small right-hand branch of Clinch River in Russell County.

**Little Mountain;** summit in Franklin County.

**Little Narrows;** passage between islands in Back Bay, Princess Anne County.

**Little North;** mountains in Augusta, Rockbridge, Shenandoah, and Frederick counties. Elevation, 2,000 to 3,000 feet.

**Little Nottoway;** river, a small left-hand branch of Nottoway River in Nottoway County.

**Little Ogle;** creek, a small right-hand tributary to Jackson River in Alleghany County.

**Little Opossum;** creek, a small right-hand branch of James River in Campbell County.

**Little Oregon;** creek, a small right-hand tributary to James River in Craig County.

**Little Otter;** river, a small left-hand tributary to Roanoke River, formed by two forks, North and South, in Bedford County.

**Little Passage;** creek, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Little Patterson;** creek, a small right-hand tributary to James River in Botetourt County.

**Little Piney;** small left-hand tributary to James River in Amherst County.

**Little Piney;** mountains in Bath County.

**Little Plymouth;** post village in King and Queen County.

**Little Prator;** creek, a small left-hand branch of Levisa Fork, rising in Buchanan County.

**Little Priest;** summit in Nelson County.

**Little Reed Island;** creek, a right-hand tributary to New River in Carroll County.

**Little Ridge;** mountains in Botetourt County.

**Little River;** post village in Floyd County on the Chesapeake and Ohio Railway.

**Little Roanoke;** creek, a small left-hand branch of Roanoke River in Charlotte County.

**Little Sandy;** creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Little Seneca;** river, a small left-hand tributary to Roanoke River in Campbell County.

**Little Sluice;** mountains in Shenandoah County. Elevation, 2,000 feet.

**Little Snake;** creek, a small right-hand tributary to New River in Carroll County.

**Little Spy;** summit in the Blue Ridge in Augusta County.

**Little Stone;** gap in Little Stone Mountain in Wise County.



**Little Stone;** mountains in Wise County.

**Little Stone Ridge;** mountains in Tazewell County. Elevation, 3,000 feet.

**Little Stony;** creek, a small left-hand tributary to Roanoke River in Bedford County.

**Little Stony;** creek, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Little Stony;** creek, a small right-hand branch of New River in Giles County.

**Little Straightstone;** creek, a small right-hand tributary to Roanoke River in Pittsylvania County.

**Little Tom;** creek, a small right-hand tributary to Clinch River, rising in Wise County.

**Littleton;** post village in Sussex County.

**Little Town Hill;** creek, a small right-hand tributary to Clinch River in Tazewell County.

**Little Tumbling;** creek, a small right-hand branch of North Fork of Holston River in Smyth County.

**Little Walker;** creek, a small right-hand branch of Walker Creek in Pulaski County.

**Little Walker;** creek, a small left-hand branch of Walker Creek, rising in Bland County.

**Little Walker;** mountains in Pulaski, Wythe, and Bland counties. Elevation, 2,000 to 3,000 feet.

**Little Willis;** river, a small right-hand tributary to James River in Buckingham and Cumberland counties.

**Litwalton;** post village in Lancaster County.

**Lively;** post village in Lancaster County.

**Livingston;** creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Lloyds;** post village in Essex County.

**Lobelias;** post village in Franklin County.

**Lochleven;** post village in Lunenburg County.

**Locker;** post village in Rockbridge County.

**Locket;** creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Lockhart;** post village in Albemarle County.

**Locklies;** post village in Middlesex County.

**Loco;** post village in Sussex County.

**Locust;** creek, a small left-hand tributary to York River in Louisa County.

**Locust;** creek, a small right-hand tributary to Roanoke River in Botetourt County.

**Locustcreek;** post village in Louisa County.

**Locustdale;** post village in Madison County.

**Locustgrove;** post village in Orange County.

**Locusthill;** post village in Middlesex County.

**Locustlane;** post village in Scott County.

**Locustmount;** post village in Accomac County.

**Locustville;** post village in Accomac County.

**Lodge;** post village in Northumberland County.

**Lodi;** post village in Washington County.

**Lodore;** post village in Amelia County.

**Loftis;** post village in Halifax County.

**Lofton;** post village in Augusta County on the Norfolk and Western Railway. Altitude, 1,782 feet.

**Logan;** creek, a small left-hand branch of North Fork of Holston River in Washington County.

- Logan**; post village in Spottsylvania County.  
**Lois**; post village in Fauquier County.  
**Lola**; post village in Pittsylvania County.  
**Londonbridge**; post village in Princess Anne County on the Norfolk and Southern Railroad.  
**Lone Buck**; small left-hand branch of James River in Amherst County.  
**Lonecedar**; post village in Patrick County.  
**Lone Fountain**; post village in Augusta County.  
**Lonegum**; village in Bedford County.  
**Loneoak**; post village in Henry County.  
**Lonepine**; post village in Bedford County.  
**Lone Tree**; summit in Blue Ridge in Augusta County. Elevation, 3,180 feet.  
**Long**; branch, a small left-hand tributary to Nottoway River in Nottoway County.  
**Long**; small left-hand branch of Nottoway River in Nottoway County.  
**Long**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.  
**Long**; branch, a small right-hand tributary to Potomac River in Fairfax County.  
**Long**; island in Roanoke River in Pittsylvania County.  
**Long**; marshy island in Back Bay in Princess Anne County.  
**Long**; mountains in Campbell County. Elevation, 1,000 feet.  
**Long**; post village in Page County.  
**Long**; run, a small right-hand tributary to James River in Botetourt County.  
**Longcreek**; post village in Louisa County.  
**Long Dale**; mines in North Mountains in Alleghany County.  
**Longdale**; post village in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 1,166 feet.  
**Long Drive**; mountains in Augusta County. Elevation, 2,500 feet.  
**Longfield**; post village in Lee County.  
**Longglade**; post village in Augusta County.  
**Long Glade**; run, a small left-hand tributary to Shenandoah River in Augusta County.  
**Longhollow**; post village in Smyth County.  
**Long Meadow**; creek, a small tributary to Shenandoah River in Augusta County.  
**Long Mountain**; post village in Amherst County.  
**Long Mountain**; summit in Amherst County.  
**Long Ridge**; summit in Page County.  
**Longs Gap**; post village in Grayson County.  
**Longs Shop**; post village in Montgomery County.  
**Longspur**; post village in Bland County.  
**Longview**; post village in Isle of Wight County.  
**Longwood**; post village in Rockbridge County.  
**Lookout**; mountains in Augusta County. Elevation, 2,000 to 2,500 feet.  
**Looney**; creek, a small right-hand branch of Levisa Fork, rising in Buchanan County.  
**Looney**; creek, a small right-hand tributary to Powell River in Wise County.  
**Looney**; post village in Craig County.  
**Looneys Mill**; creek, a small right-hand tributary to James River in Botetourt County.  
**Loop**; summit in Rockbridge County. Elevation, 2,500 feet.  
**Loretto**; post village in Essex County.  
**Lorne**; post village in Caroline County.  
**Lorraine**; post village in Henrico County on the Chesapeake and Ohio Railway.  
**Lorton Valley**; post village in Fairfax County.  
**Lost**; creek, a small right-hand branch of Guest River in Wise County.  
**Lost**; mountains in Roanoke County. Elevation, 2,000 feet.

**Lost**; mountains in Fauquier County. Elevation, 750 feet.

**Lost Mountain**; summit in Madison County.

**Lot**; post village in Middlesex County.

**Lots**; gap in Mays Mountain.

**Lottie**; post village in Rappahannock County.

**Lottsburg**; post village in Northumberland County.

**Lotus**; post village in Wise County.

**Loudoun**; county, situated in the northern part of the State in the Piedmont region, the western boundary being the summit of the Blue Ridge and northern and eastern boundaries being Potomac River. The surface is mainly rolling, and it is traversed by the Catoctin Mountain, Short Hill, and the eastern slopes of the Blue Ridge. Most of its area lies below the 500-foot level. Area, 519 square miles. Population, 21,948—white, 16,079; negro, 5,868; foreign born, 101. County seat, Leesburg. The mean magnetic declination in 1900 was 3° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature 50° to 55°. The county is traversed by the Southern Railway.

**Loudoun Heights**; summit in the Blue Ridge on the south side of Harpers Ferry Gap.

**Louisa**; county, situated in the central part of the State in the Piedmont region. It has an undulating surface, and lies but a few hundred feet above sea level. Area, 529 square miles. Population, 16,517—white, 7,896; negro, 8,621; foreign born, 49. County seat, Louisa. The mean magnetic declination in 1900 was 3° 35'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio Railway.

**Louisa**; county seat of Louisa County on the Chesapeake and Ohio Railway. Population, 261.

**Loup**; creek, a small left-hand tributary to Clinch River in Russell County.

**Louse**; creek, a small left-hand tributary to Roanoke River in Charlotte County.

**Love**; post village in Nelson County.

**Love**; run, a small right-hand tributary to Shenandoah River in Augusta County.

**Lovelady**; creek, a small right-hand branch of North Fork of Clinch River in Lee County.

**Lovelady**; creek, a small left-hand tributary to James River in Amherst County.

**Lovelady**; gap in Powell Mountain, made by Lovelady Creek, in Lee County.

**Lovelady Mountain**; summit in Amherst County.

**Lovels**; creek, a small left-hand tributary to Yadkin River in Patrick County.

**Love Mills**; village in Washington County.

**Lovett**; point on Elizabeth River in Norfolk County.

**Lovettsville**; town in Loudoun County. Population, 97.

**Lovington**; county seat of Nelson County.

**Low**; gap in Grayson County.

**Low**; gap in Sandy Ridge Mountains in Russell County.

**Lower**; gap in Back Creek Mountains, made by Back Creek, a left-hand tributary to James River in Highland County.

**Lower Field**; small right-hand branch of Slate Creek in Buchanan County.

**Lowesville**; post village in Amherst County.

**Lowland**, post village in Washington County.

**Lowmoor**; post village in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 1,156 feet.

**Lowry**; post village in Bedford County on the Norfolk and Western Railway. Altitude, 779 feet.

**Loyalty**; post village in Loudoun County.

**Lucia**; post village in Henry County.

**Luckets**; post village in Loudoun County.

**Lula**; post village in Charlotte County.

**Luma;** village in Washington County.

**Lumberton;** post village in Sussex County.

**Lundy;** post village in Grayson County.

**Lunenburg;** county, situated in the southern part of the State in the Piedmont region. It has an undulating surface with an altitude of from 300 to 500 feet above sea level. Area, 471 square miles. Population, 11,705—white, 5,133; negro, 6,572; foreign born, 122; county seat Lunenburg. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 50 inches, and the temperature 55° to 60°. The county is traversed by the Seaboard Air Line and the Southern railways.

**Lunenberg;** county seat of Lunenburg County.

**Lunette;** post village in Loudoun County.

**Lunsford;** post village in Cumberland County.

**Luray;** county seat of Page County on the Norfolk and Western Railway. Altitude, 819 feet. Population, 1,147.

**Lurich;** post village in Giles County on the Norfolk and Western Railway. Altitude, 1,526 feet.

**Luster;** fork, a small left-hand branch of Knox Creek, rising in Buchanan County.

**Lux;** post village in Dinwiddie County.

**Lydia;** post village in Greene County.

**Lyells;** post village in Richmond County.

**Lylevue;** post village in Botetourt County.

**Lynch;** creek, a small left-hand tributary to James River in Nelson County.

**Lynch;** river, a small left-hand tributary to James River in Greene and Albemarle counties.

**Lynchburg;** city, independent in government, situated in Campbell County, on the Chesapeake and Ohio, the Norfolk and Western, and the Southern railways. Altitude, 524 feet. Population, 18,891.

**Lynchburg;** mines in the western part of the Blue Ridge in Botetourt County.

**Lynch Station;** post village in Campbell County on the Seaboard Air Line Railway.

**Lyndhurst;** post village in Augusta County on the Norfolk and Western Railway. Altitude, 1,337 feet.

**Lynhams;** post village in Northumberland County.

**Lynne Camp;** branch, a small right-hand tributary to Levisa Fork in Buchanan County.

**Lynn Haven;** inlet, a passage through the bordering sand bar on the southeast coast.

**Lynnhaven;** post village in Princess Anne County on the Norfolk and Western Railway.

**Lynn Haven;** river, rising in Princess Anne County and flowing north through Lynn Haven Inlet into Chesapeake Bay.

**Lynn Haven;** roads, a harbor at the mouth of Lynn Haven River, by which it is connected with Chesapeake Bay, in Princess Anne County.

**Lynnville;** creek, a small right-hand branch of Roanoke River in Franklin County.

**Lynnville;** ford in Roanoke River in Franklin County.

**Lynville;** mountains in Bedford County. Elevation, 1,500 to 2,000 feet.

**Lynnwood;** post village in Rockingham County.

**Lyon;** gap in Walker Mountains in Smyth County.

**Lytton;** ford in Powell River in Lee County.

**Mableton;** post village in Hanover County.

**MacAfee Knob;** summit in Catawba Mountains in Roanoke County. Elevation, 3,201 feet.

**Macanie;** post village in Shenandoah County.

**McClelland;** post village in Isle of Wight County.

**McClung;** post village in Bath County.

- McClung Ridge**; mountains in Bath County.
- McClure**; fork, a small left-hand branch of Russell Fork, rising in Dickenson County.
- McConnell**; post village in Scott County on the Norfolk and Western Railway.
- Maccrady**; post village in Smyth County.
- McDaniel**; small left-hand branch of North Fork of Holston River in Smyth County.
- McDonalds Mill**; post village in Montgomery County.
- McDowell**; town in Highland County. Population, 136.
- McDuff**; post village in Caroline County.
- Maceo**; post village in Dinwiddie County.
- Maces Spring**; post village in Scott County.
- McFalls**; branch, a small right-hand tributary to James River in Botetourt County.
- McFalls**; mountain in Bedford County. Elevation, 2,426 feet.
- McFarlands**; post village in Lunenburg County.
- McGaheysville**; post village in Rockingham County on the Chesapeake Western Railway.
- McGavock**; river, a small left-hand tributary to New River in Wythe County.
- McGehees**; post village in Fluvanna County.
- McGrady**; creek, a small right-hand branch of North Fork of Holston River in Smyth County.
- McGraw**; gap in Alleghany County caused by Smyth Creek.
- McHenry**; creek, a small left-hand tributary to North Fork of Holston River in Washington County.
- McHenry**; post village in Spotsylvania County.
- Machipongo**; post village in Northampton County on the New York, Philadelphia and Norfolk Railroad.
- Machodoc**; creek, a small right-hand branch of Potomac River in King George County.
- Machodoc**; post village in Westmoreland County.
- McHolt**; post village in Halifax County.
- McInturf**; gap in Short Mountain in Shenandoah County.
- McIvors**; station in Amherst County on the Richmond and Danville Railway. Altitude, 704 feet.
- Mack**; creek, a small right-hand branch of New River in Pulaski County.
- Mack**; mountains in Pulaski and Floyd counties. Elevation, 2,000 to 3,404 feet.
- Mackalls Hill**; summit in Fairfax County.
- MacKeever**; ferry over Roanoke River in Fairfax County.
- McKenney**; post village in Dinwiddie County on the Seaboard Air Line Railroad.
- Mackie**; post village in Norfolk County.
- McKinley**; post village in Augusta County.
- MacMullen**; post village in Green County on the Norfolk and Western Railway.
- Macon**; post village in Powhatan County on the Farmville and Powhatan Railroad.
- MacRaes**; post village in Cumberland County on the Farmville and Powhatan Railroad.
- McVeigh**; ford of Roanoke River in Bedford County.
- Madcap**; creek, a small right-hand tributary to Roanoke River in Franklin County.
- Maddux**; post village in Nottoway County.
- Madison**; county, situated in the northern part of the State in the Piedmont region. Its southeastern part is rolling with a few isolated summits, while the western part is made up of heavy spurs of the Blue Ridge. The elevation ranges from 300 to 4,000 feet, the latter being in the Blue Ridge summits. Area, 336 square miles. Population, 10,216—white, 6,695; negro, 3,521; foreign born, 6. County seat, Madison. The mean magnetic declination in 1900 was 3° 30'. The mean annual rainfall is 50 to 55 inches, and the temperature 50°.

**Madison**; county seat of Madison County on the Chesapeake and Ohio Railway.

**Madison**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Madison Mill**; branch, a small left-hand tributary to Roanoke River in Charlotte County.

**Madison Mills**; post village in Madison County.

**Madison Run**; post village in Orange County.

**Madisonville**; post village in Charlotte County.

**Madrid**; post village in Augusta County.

**Mad Sheep**; summit in Alleghany Front in Bath County.

**Mad Tom**; summit in Alleghany Front in Bath County.

**Maggie**; post village in Craig County.

**Maggoty**; creek, a small left-hand tributary to Staunton River in Franklin County.

**Maggoty**; gap in the western part of the Blue Ridge, caused by a small branch of Back Creek, in Roanoke County.

**Maggoty**; small right-hand tributary to Roanoke River in Franklin County.

**Magnet**; post village in Isle of Wight County.

**Magnolia**; post village in Nansemond County.

**Magruder**; post village in York County.

**Mahala**; post village in Loudoun County.

**Mahoney**; post village in Bland County.

**Maiden**; branch, a small left-hand tributary to North Fork of Holston River in Washington County.

**Maidens**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Maiden Spring**; creek, a left-hand tributary to Clinch River, rising in Tazewell County.

**Main Top Mountain**; summit in Nelson County.

**Major**; post village in Grayson County on the Chesapeake and Ohio Railway.

**Mallory**; branch, a small left-hand tributary to Nottoway River in Nottoway County.

**Mallory**; post village in Louisa County.

**Mallorys**; creek, a small right-hand branch of James River in Buckingham County.

**Mallow**; post village in Alleghany County on the Pennsylvania Railroad.

**Malone**; bridge across Rowanty Creek in Dinwiddie County.

**Malva**; post village in Mecklenburg County.

**Malvern Hill**; post village in Henrico County.

**Manassas**; gap in the Blue Ridge in Warren County.

**Manassas**; county seat of Prince William County on the Chesapeake and Ohio and the Southern railways. Population, 817.

**Manchester**; city in Chesterfield County, but independent in government; on the Atlantic Coast Line, Seaboard Air Line, and the Southern railroads. Population, 9,715.

**Manchester**; run, a small right-hand branch of James River in Prince George County.

**Maness**; post village in Scott County.

**Mangohick**; post village in King William County.

**Manila**; post village in Franklin County.

**Mannboro**; post village in Amelia County.

**Manquin**; post village in King William County.

**Manry**; post village in Southampton County.

**Mansfield**; post village in Louisa County.

**Mansion**; village in Campbell County.

**Mantapike**; post village in King and Queen County.

**Manteo**; post village in Buckingham County.

- Manteo**; station in Nelson County on the Chesapeake and Ohio Railway.  
**Maple**; branch, a small right-hand tributary to New River in Pulaski County.  
**Maple**; post village in Botetourt County.  
**Maplegrove**; post village in Westmoreland County.  
**Mapleton**; post village in Princess Anne County.  
**Maplewood**; post village in Amelia County on the Southern Railway.  
**Mappsburg**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.  
**Mappesville**; post village in Accomac County.  
**Marble Valley**; post village in Augusta County.  
**Marengo**; post village in Mecklenburg County.  
**Marganna**; post village in Culpeper County.  
**Marion**; county seat of Smyth County on the Norfolk and Western Railway. Altitude, 2,124 feet. Population, 2,045.  
**Marionville**; post village in Northampton County.  
**Markham**; post village in Fauquier County on the Southern Railway. Altitude, 552 feet.  
**Marksville**; post village in Page County on the Norfolk and Western Railway. Altitude, 1,063 feet.  
**Marl**; post village in Prince George County.  
**Marlboro**; point on Potomac River in Stafford County.  
**Marlboro**; post village in Frederick County.  
**Marlbrook**; post village in Rockbridge County on the Norfolk and Western Railway. Altitude, 1,162 feet.  
**Marlbrook**; run, a small left-hand tributary to James River in Rockbridge County.  
**Marmion**; post village in Rockbridge County.  
**Marmora**; post village in Dinwiddie County.  
**Marrowbone**; creek, a small left-hand tributary to Roanoke River in Appomattox County.  
**Marrowbone**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.  
**Marsh**; run, a small left-hand branch of Rappahannock River in Fauquier County.  
**Marshall**; creek, a small left-hand tributary to Appomattox River in Chesterfield County.  
**Marshall**; post village in Fauquier County on the Southern Railway.  
**Marshall**; run, a small left-hand tributary to Shenandoah River in Rockingham County.  
**Marsh Market**; post village in Accomac County.  
**Martin**; branch, a small left-hand tributary to Roanoke River in Charlotte County.  
**Martin**; creek, a right-hand branch of Powell River in Lee County.  
**Martin**; creek, a small left-hand tributary to Roanoke River in Appomattox County.  
**Martin**; village in Henry County.  
**Martins Store**; post village in Halifax County.  
**Martinsville**; county seat of Henry County; on the Danville and Western and the Norfolk and Western railways. Altitude, 934 feet. Population, 2,384.  
**Marumsco**; creek, a small right-hand branch of Potomac River in Prince William County.  
**Marye**; a post village in Spottsylvania County.  
**Mary Gray**; summit in Augusta County.  
**Marysville**; post village in Campbell County. Altitude, 525 feet.  
**Maryus**; post village in Gloucester County.  
**Masada**; post village in Washington County.  
**Mascot**; post village in King and Queen County.  
**Mason**; creek, a small left-hand branch of Roanoke River in Roanoke County.

**Mason**; creek, a small right-hand tributary to Roanoke River in Roanoke County.

**Mason**; creek in Princess Anne County emptying into Willoughby Bay.

**Mason**; island in Potomac River in Loudoun County.

**Mason Cove**; small branch of Mason Creek tributary to Roanoke River in Roanoke County.

**Mason Knob**; summit in Roanoke County. Elevation, 3,217 feet.

**Masons Depot**; post village in Sussex County on the Southern Railway.

**Masons Store**; county seat of Russell County.

**Massanetta Springs**; village in Rockingham County.

**Massanutten**; mountains in the Shenandoah Valley between the forks of Shenandoah River. Elevation, 1,500 to 2,500 feet.

**Massanutton**; post village in Page County.

**Massaponax**; river, a small right-hand branch of Rappahannock River in Spottsylvania County.

**Massaponax**; post village in Spottsylvania County.

**Massey**; post village in Accomac County.

**Massie Mountain**; summit in Nelson County.

**Massies Mill**; post village in Nelson County.

**Masters**; post village in Alleghany County.

**Mat**; river, a small right-hand tributary to Mattaponi River in Spottsylvania County.

**Mathews**; county, situated in the eastern part of the State on the west coast of Chesapeake Bay. The surface is level and but little elevated above the sea. Area, 92 square miles. Population, 8,239—white, 5,844; negro, 2,395; foreign-born, 13. County seat, Mathews. The mean magnetic declination in 1900 was 4° 57'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.

**Mathews**; creek, a small right-hand tributary to James River in Buckingham County.

**Mathews**; county seat of Mathews County.

**Mathias Point**; post village in King George County.

**Matilda**; post village in Bedford County.

**Matoaca**; post village in Chesterfield County on the Chesapeake and Ohio Railway.

**Matta**; river, a small right-hand branch of Mattaponi River in Caroline County.

**Mattaponi**; river, heading in the Piedmont region and flowing southeast to its junction with the Pamunkey to form York River; navigable to Mundy Bridge, a distance of 55 miles.

**Mattoax**; post village in Amelia County on the Southern Railway.

**Mattox**; creek, a small right-hand branch of Potomac River in Westmoreland and King George counties.

**Matts**; creek, a small right-hand branch of James River in Bedford County.

**Mauck**; post village in Page County.

**Maurertown**; post village in Shenandoah County on the Baltimore and Ohio Railroad. Altitude, 788 feet.

**Mauzy**; village in Rockingham County.

**Max**; post village in Carroll County.

**Max Meadows**; post village in Wythe County on the Norfolk and Western Railway. Altitude, 2,015 feet.

**Maxwell**; post village in Tazewell County, on the Norfolk and Western Railway. Altitude, 2,356 feet.

**Maxwelton**; post village in Halifax County.

**May**; creek, a small left-hand branch of James River in Nelson County.

**Mayberry**; post village in Patrick County.

**Maybrook**; post village in Giles County.

**Mayland**; village in Rockingham County.



**Mayo**; post village in Halifax County.

**Mayoforge**; village in Patrick County.

**Mays**; mountain in Wythe County. Elevation, 2,500 to 2,849 feet.

**Maywood**; post village in Craig County.

**Meade**; post village in Essex County.

**Meadow**; small right-hand branch of Potomac River in Stafford County.

**Meadow**; bridge across Chickahominy River in Hanover County.

**Meadow**; creek, a small right-hand tributary to James River in Buckingham County.

**Meadow**; creek, a small right-hand tributary to James River in Craig County.

**Meadow**; creek, a small right-hand tributary to New River in Montgomery County.

**Meadow**; fork, a small right-hand fork of Straight Creek in Lee County.

**Meadow**; run, a small right-hand tributary to New River in Floyd County.

**Meadow**; run, a small left-hand tributary to James River in Highland County.

**Meadowcreek**; post village in Grayson County.

**Meadowdale**; post village in Highland County.

**Meadow Mills**; post village in Frederick County.

**Meadows of Dan**; post village in Patrick County.

**Meadow Station**; post village in Henrico County.

**Meadowview**; post village in Washington County on the Norfolk and Western Railway. Altitude, 2,138 feet.

**Meadowville**; post village in Chesterfield County.

**Meadville**; post village in Halifax County.

**Mears**; post village in Accomac County.

**Mearsville**; post village in Accomac County.

**Mecca**; post village in Pulaski County.

**Mechanicsburg**; town in Bland County. Population, 113.

**Mechanicsville**; post village in Loudoun County.

**Mechum**; creek, a small left-hand tributary to James River in Albemarle and Fluvanna counties.

**Mechumps**; creek, a small right-hand branch of Pamunkey River.

**Mechum River**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Mecklenburg**; county, situated in the southern part of the State in the eastern part of the Piedmont region, bordering the North Carolina line. It has a rolling surface, and elevated only about 300 to 500 feet. Area, 640 square miles. Population, 26,551—white, 10,353; negro, 16,198; foreign born, 64. County seat, Boydton. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 50 to 60 inches, and the temperature 55° to 60°. The county is traversed by the Seaboard Air Line and the Southern railways.

**Medina**; village in Washington County.

**Medley**; village in Roanoke County.

**Medlock**; post village in Louisa County.

**Meetinghouse**; small left-hand branch of Slate Creek in Buchanan County.

**Meetze**; post village in Fauquier County on the Southern Railway.

**Meherrin**; post village in Lunenburg County on the Southern Railway. Altitude, 589 feet.

**Meherrin**; river, a head branch of Chowan River in southeastern part of the State.

**Melfa**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Melita**; post village in Buckingham County.

**Melrose**; village in Rockingham County.

**Meltons**; post village in Louisa County on the Chesapeake and Ohio Railway. Altitude, 519 feet.

**Menchville**; post village in Warwick County on the Chesapeake and Ohio Railway.

**Mendota**; post village in Washington County on the Virginia and Southwestern Railway.

**Menla**; post village in Pittsylvania County.

**Mentow**; post village in Bedford County.

**Mercerville**; post village in Louisa County.

**Meredithville**; post village in Brunswick County.

**Meridian**; post village in Dinwiddie County.

**Meriwether**; post village in Pittsylvania County.

**Merrifield**; post village in Fairfax County.

**Merrimac**; post village in Culpeper County.

**Merrypoint**; post village in Lancaster County.

**Messick**; post village in York County.

**Messongo**; post village in Accomac County.

**Metomkin**; point on Potomac River in King George County.

**Metomkin**; post village in Accomac County.

**Meyerhoeffers Store**; village in Rockingham County.

**Meyrick**; village in Bedford County.

**Michaux**; post village in Powhatan County.

**Middle**; creek, a small right-hand tributary to James River in Craig and Botetourt counties.

**Middle**; creek, a small right-hand branch of Clinch River in Tazewell County.

**Middle**; mountain in Craig County.

**Middle**; mountain in Rockbridge County.

**Middle**; mountains in Augusta County.

**Middle**; mountains in Highland County. Elevation, 3,500 to 4,000 feet.

**Middle**; mountains in Page County. Elevation, 2,000 to 2,500 feet.

**Middle**; river, a branch of Shenandoah River in Augusta County.

**Middle**; river, a small right-hand tributary to Potomac River in Fairfax County.

**Middle**; run, a small right-hand tributary to Rappahannock River in Greene County.

**Middlebrook**; post village in Augusta County.

**Middleburg**; town in Loudoun County. Population, 296.

**Middle Elk**; creek, a small right-hand branch of Knox Creek, rising in Buchanan County.

**Middle Fox**; creek, a small right-hand tributary to New River in Grayson County.

**Middle Ridge**; mountains in Franklin County.

**Middlesex**; county, situated in the eastern part of the State on the south side of Rappahannock River, and extending to the west shore of Chesapeake Bay. The surface is level and but little elevated. Area, 156 square miles. Population, 8,220—white, 3,684; negro, 4,536; foreign born, 6. County seat, Saluda. The mean magnetic declination in 1900 was 4° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.

**Middletown**; town in Frederick County on the Baltimore and Ohio Railroad. Altitude, 660 feet. Population, 423.

**Midland**; post village in Fauquier County on the Southern Railway.

**Midlothian**; post village in Chesterfield County on the Southern Railway.

**Midvale**; post village in Rockbridge County on the Norfolk and Western Railway.

**Midway**; post village in Halifax County.

**Midway**; small right-hand tributary to Levisa Fork in Buchanan County.

**Midway Mills**; post village in Nelson County on the Chesapeake and Ohio Railway.

**Mike**; post village in Campbell County.

**Mila**; post village in Northumberland County.

**Mile**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Milford**; post village in Caroline County on the Richmond, Fredericksburg and Piedmont Railroad.

**Mill**; small right-hand branch of Roanoke River in Roanoke County.

**Mill**; small branch of Walker Creek in Giles County.

**Mill**; branch, a small left-hand tributary to Roanoke River in Bedford County.

**Mill**; small right-hand branch of Powell River in Wise County.

**Mill**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.

**Mill**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.

**Mill**; creek, a small left-hand branch of South Fork of Holston River in Washington County.

**Mill**; creek, a small left-hand tributary to Clinch River, rising in Scott County.

**Mill**; creek, a small right-hand tributary to New River in Montgomery County.

**Mill**; creek, a small right-hand branch of Wolf Creek, a tributary to New River in Giles County.

**Mill**; creek, a small right-hand branch of Guest River in Wise County.

**Mill**; creek, a small right-hand branch of Rappahannock River in Caroline County.

**Mill**; creek, a small left-hand tributary to James River in Amherst and Rockbridge counties.

**Mill**; creek, a small right-hand branch of Roanoke River in Pittsylvania County.

**Mill**; creek, a small right-hand branch of Powell River in Lee County.

**Mill**; creek, a small right-hand tributary to Jackson River in Craig County.

**Mill**; creek, a small left-hand branch of Shenandoah River in Rockingham County.

**Mill**; creek, a small left-hand branch of James River in Botetourt County.

**Mill**; creek, a small right-hand tributary to James River in Botetourt County.

**Mill**; creek, a small right-hand tributary to Roanoke River in Franklin County.

**Mill**; creek, a small right-hand branch of Clinch River in Tazewell and Russell counties.

**Mill**; creek, a small right-hand tributary to Shenandoah River in Page County.

**Mill**; gap in Little Mountains caused by East Branch, a left-hand tributary to James River, in Highland County.

**Mill**; mountains in Bath, Rockbridge, and Alleghany counties. Elevation, 2,000 feet.

**Mill**; post village in Carroll County.

**Mill**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Mill or North Buckskin**; creek, a small right-hand tributary to Appomattox River in Amelia County.

**Millbank**; post village in Prince Edward County.

**Millboro**; post village in Bath County on the Chesapeake and Ohio Railway. Altitude, 1,680 feet.

**Millboro Spring**; post village in Bath County.

**Millburn**; post village in Buckingham County.

**Milldale**; post village in Warren County.

**Millenbeck**; post village in Lancaster County.

**Miller**; branch, a small right-hand tributary to Jackson River in Alleghany County.

**Miller**; creek, a small left-hand tributary to New River in Wythe County.

**Miller**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Miller**; run, a small right-hand branch of James River in Buckingham County.

**Millers**; cove in Roanoke County.

**Millers**; creek, a small right-hand tributary to New River in Wythe County.

**Millers**; ford in Roanoke River in Pittsylvania County.

**Millers**; mountain in Bedford County. Elevation, 1,413 feet.

**Millers Knob**; summit in Rockingham County.

- Millers Tavern**; post village in Essex County.  
**Millgap**; post village in Highland County.  
**Millington**; post village in Albemarle County.  
**Mill Mountain**; summit in Roanoke County. Elevation, 1,721 feet.  
**Mill Mountain**; summit on State line in Shenandoah County; extending into Hardy County, W. Va.  
**Mill Ridge**; mountains in Alleghany County. Elevation, 2,000 to 2,500 feet.  
**Mills**; creek, a small right hand tributary to Shenandoah River in Augusta County.  
**Mills**; mountains in Botetourt and Roanoke counties. Elevation, 1,500 to 2,806 feet.  
**Millstone**; small right-hand branch of Clinch River in Tazewell County.  
**Millwood**; post village in Clarke County on the Baltimore and Ohio Railroad.  
**Milnesville**; post village in Augusta County.  
**Milt**; post village in Lee County.  
**Mine**; creek, a small right-hand tributary to New River in Carroll County.  
**Mine**; mountain in Rockingham County. Elevation, 2,500 feet.  
**Mine**; run, a small right-hand tributary to Rappahannock River in Orange County.  
**Minebank**; post village in Frederick County.  
**Mineral**; post village in Louisa County.  
**Minerun**; post village in Orange County.  
**Minerva**; post village in Carroll County.  
**Mingo**; village in Franklin County.  
**Mink Hill**; sand hill in Princess Anne County near the eastern coast.  
**Minneola**; post village in Pittsylvania County.  
**Minnieville**; post village in Prince William County.  
**Minor**; post village in Essex County.  
**Mint Spring**; post village in Augusta County on the Baltimore and Ohio Railroad.  
**Miona**; post village in Accomac County.  
**Mirafork**; post village in Floyd County.  
**Miry**; run, a small right-hand branch of Appomattox River in Dinwiddie County.  
**Miskimon**; post village in Northumberland County.  
**Mitchell Knob**; summit in Carroll County. Altitude, 3,240 feet.  
**Mitchells**; post village in Culpeper County on the Southern Railway.  
**Misphia**; post village in Lunenburg County.  
**Moab**; village in Washington County.  
**Mobjack**; post village in Mathews County.  
**Moccasin Ridge**; mountains in Scott and Russell counties. Elevation, 2,500 feet.  
**Model**; village in Rockingham County.  
**Modest**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.  
**Modesttown**; post village in Accomac County.  
**Modoc**; village in Henry County.  
**Moffats Creek**; post village in Augusta County.  
**Moffet**; post village in Halifax County on the Southern Railway.  
**Moffets**; creek, a small left-hand tributary to James River in Rockbridge and Augusta counties.  
**Moffett**; run, a small left-hand tributary to Shenandoah River in Augusta County.  
**Mohawk**; creek, a small right-hand branch of James River in Powhatan County.  
**Mohea**; post village in Warwick County.  
**Mohemenco**; post village in Powhatan County.  
**Mole**; hill in Rockingham County.  
**Molina**; post village in Warren County.  
**Moll**; creek, a small left-hand tributary to Clinch River, rising in Russell County.  
**Molley**; creek, a small left-hand tributary to Roanoke River in Campbell County.  
**Molusk**; post village in Lancaster County.  
**Monarat**; post village in Carroll County.

- Monasco**; mountain in Nelson County.
- Monaskon**; post village in Lancaster County.
- Monday**; post village in Floyd County.
- Moneta**; post village in Bedford County.
- Monitor**; post village in Amherst County.
- Monmouth**; post village in Rockbridge County.
- Monrovia**; post village in Orange County.
- Montague**; post village in Essex County.
- Montebello**; post village in Nelson County.
- Montethville**; post village in Stafford County.
- Monterey**; county seat of Highland County. Population, 246. Altitude, 3,008 feet.
- Monterey**; mountains in Highland County. Elevation, 3,000 to 3,500 feet.
- Montevideo**; post village in Rockingham County on the Chesapeake Western Railway.
- Montezuma**; village in Rockingham County.
- Montfort**; village in Orange County.
- Montgomery**; county, situated in the western part of the State in the Appalachian Valley. Its surface consists in part of undulating country with some parallel ridges and valleys separating them. It is drained by Roanoke River. The altitude ranges from 1,200 to 3,000 feet. Area, 394 square miles. Population, 15,852—white, 12,927; negro, 2,925; foreign born, 37. County seat Christiansburg. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western Railway.
- Montgomery**; post village in Washington County on the Norfolk and Western Railway. Altitude, 1,990 feet.
- Montgomery Knob**; summit in Rich Patch Mountains in Alleghany County. Elevation, 2,000 to 2,500 feet.
- Montgomery Springs**; post village in Montgomery County.
- Montpelier**; post village in Hanover County on the Southern Railway.
- Montross**; county seat of Westmoreland County.
- Montvale**; post village in Bedford County on the Norfolk and Western Railway.
- Moody**; post village in Hanover County.
- Moomaw**; village in Roanoke County.
- Moore**; small right-hand branch of Beaver Creek, rising in Washington County.
- Moore**; creek, a small left-hand tributary to James River in Albemarle County.
- Moore**; creek, a small right-hand tributary to James River in Rockbridge and Powhatan counties.
- Moore's Mill**; post village in Henry County.
- Moore's Store**; post village in Shenandoah County.
- Moorings**; post village in Surry County on the Surry, Sussex and Southampton Railroad.
- Moormans**; river, a small left-hand tributary to James River in Albemarle County.
- Moormans River**; post village in Albemarle County.
- Moran**; post village in Lancaster County on the Norfolk and Western Railway.
- Moreland**; gap in Short Mountains, caused by Gap Creek, in Shenandoah County.
- Morgan**; post village in Scott County.
- Morly Mountain**; summit in Amherst County.
- Morris**; hill in Alleghany County.
- Morris Church**; post village in Campbell County.
- Morris Knob**; summit in Tazewell County. Elevation, 4,510 feet.
- Morrison**; post village in Warwick County.
- Morrisonville**; post village in Loudoun County.

- Morrisville**; post village in Fauquier County.  
**Mortons**; ford of Rapidan River in Culpeper County.  
**Morven**; post village in Amelia County.  
**Mosby**; post village in Fauquier County.  
**Moscow**; post village in Augusta County.  
**Moseley**; post village in Buckingham County on the Farmville and Powhatan and the Southern railroads.  
**Moseley Mountain**; summit in Bedford County. Elevation, 1,268 feet.  
**Moseleys Junction**; post village in Powhatan County on the Farmville and Powhatan Railroad.  
**Mossing Ford**; post village in Charlotte County.  
**Mossneck**; post village in Caroline County.  
**Mossy**; creek, a small left-hand tributary to Shenandoah River in Augusta County.  
**Mossy**; run, a small right-hand tributary to Jackson River in Alleghany County.  
**Mossycreek**; post village in Augusta County on the Chesapeake Western Railway.  
**Motleys**; post village in Pittsylvania County on the Southern Railway.  
**Mount**; creek, a small right-hand branch of Rappahannock River in Caroline County.  
**Mount**; post village in Stafford County.  
**Mountain**; branch, a small left-hand tributary of James River in Rockbridge County.  
**Mountain**; branch, a small left-hand tributary to Roanoke River in Appomattox County.  
**Mountain**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.  
**Mountain**; fork, a small right-hand tributary to Clinch River in Scott County.  
**Mountain**; lake in Giles County.  
**Mountain**; run, a small left-hand tributary to Shenandoah River in Augusta County.  
**Mountain**; run, a small right-hand tributary to Rappahannock River in Culpeper County.  
**Mountain**; run, a small right-hand tributary to Rappahannock River in Orange County.  
**Mountain Falls**; post village in Frederick County.  
**Mountaingap**; post village in Loudoun County.  
**Mountaingrove**; post village in Bath County.  
**Mountain Lake**; post village in Giles County.  
**Mountain Road**; post village in Halifax County.  
**Mountain Valley**; post village in Henry County.  
**Mountainview**; post village in Stafford County.  
**Mountairy**; post village in Pittsylvania County.  
**Mount Alto**; summit in Albemarle County.  
**Mount Athos**; post village in Campbell County.  
**Mount Carmel**; post village in Halifax County.  
**Mountcastle**; post village in New Kent County on the Chesapeake and Ohio Railway.  
**Mount Clifton**; village in Shenandoah County.  
**Mount Clinton**; post village in Rockingham County.  
**Mount Crawford**; town in Rockingham County on the Baltimore and Ohio Railroad. Altitude, 1,171 feet. Population, 330.  
**Mountcross**; post village in Pittsylvania County.  
**Mount Erin**; summit in Fairfax County.  
**Mountfair**; post village in Albemarle County.  
**Mount Field**; branch, a small right-hand tributary to Roanoke River in Pittsylvania County.  
**Mount Gilead**; post village in Loudoun County.

- Mount Holly**; post village in Westmoreland County.
- Mount Jackson**; town in Shenandoah County on the Southern and the Baltimore and Ohio railroads. Altitude, 916 feet. Population, 472.
- Mount Landing**; post village in Essex County.
- Mount Laurel**; post village in Halifax County.
- Mount Leigh**; post village in Prince Edward County.
- Mount Meridian**; post village in Augusta County.
- Mount Olive**; post village in Shenandoah County.
- Mount Pleasant**; post village in Spottsylvania County on the Baltimore and Potomac Railroad.
- Mount Pleasant**; summit in Amherst County. Elevation, 4,098 feet.
- Mount Sidney**; town in Augusta County on the Baltimore and Ohio Railroad. Altitude, 1,258 feet. Population, 197.
- Mount Solon**; post village in Augusta County.
- Mount Vernon on the Potomac**; post village in Fairfax County on the Washington, Alexandria and Mount Vernon Electric Railway.
- Mountville**; post village in Loudoun County.
- Mount Vinco**; post village in Buckingham County.
- Mount Williams**; post village in Frederick County.
- Mount Zion**; post village in Campbell County.
- Mouth of Wilson**; post village in Grayson County.
- Muckross**; post village in Mecklenburg County.
- Mud**; creek, a small left-hand branch of Powell River in Lee County.
- Mud**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.
- Mud**; fork, a small left-hand tributary to New River, rising in Grayson County.
- Mud**; fork, a small tributary to Bluestone River in Tazewell County.
- Mud**; run, a small left-hand tributary to James River in Amherst County.
- Muddy**; small creek emptying into North Bay in Princess Anne County.
- Muddy**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.
- Muddy**; creek, a small left-hand branch of Rappahannock County.
- Muddy**; creek, a small left-hand tributary to Shenandoah River in Rockingham County.
- Muddy**; creek, a small right-hand tributary to James River in Buckingham County.
- Muddy**; creek, a small right-hand branch of James River in Powhatan and Cumberland counties.
- Muddy**; run, a small left-hand tributary to James River in Bath County.
- Muddy**; run, a small right-hand tributary to Rappahannock River in Culpeper County.
- Mud Hole**; gap in Three Top Mountains, caused by Little Passage Creek.
- Mud Lick**; creek, a small right-hand branch of Clinch River in Tazewell County.
- Mud Lick**; creek, a small right-hand branch of Roanoke River in Roanoke County.
- Mud Lick**; creek, a small right-hand tributary to Powell River in Wise County.
- Mulberry**; creek, a small left-hand tributary to Roanoke River in Appomattox County.
- Mulberry Island**; post village in Warwick County.
- Mulch**; post village in Richmond County.
- Mullin**; small right-hand branch of Slate Creek in Buchanan County.
- Mumpower**; village in Washington County.
- Munden**; post village in Princess Anne County on the Norfolk and Southern Railroad.
- Mundy Point**; post village in Northumberland County.
- Mundys**; post village in Amherst County.
- Munford**; post village in Botetourt County.
- Munson Hill**; summit in Fairfax County.

- Murat**; post village in Rockbridge County.
- Murray**; gap in western part of the Blue Ridge, caused by a small branch of Back Creek, in Roanoke County.
- Murray Knob**; summit in Franklin County.
- Murrill**; gap between Taylors and McFalls mountains in Bedford County.
- Murtleville**; post village in Stafford County.
- Muse**; post village in Augusta County.
- Museville**; post village in Pittsylvania County.
- Musselman**; post village in Stafford County.
- Myndus**; post village in Nelson County.
- Myra**; fork, a small right-hand tributary to New River in Floyd County.
- Myron**; post village in Prince William County.
- Myrtle**; post village in Nansemond County on the Norfolk and Western Railway.
- Nace**; post village in Botetourt County.
- Naffs**; post village in Franklin County.
- Nahor**; post village in Fluvanna County.
- Nain**; post village in Frederick County.
- Naked**; creek, a small left-hand tributary to Shenandoah River in Augusta County.
- Naked**; creek, a small right-hand branch of Shenandoah River between Page and Rockingham counties.
- Naked**; mountain in Nelson County.
- Naked**; mountain in Fauquier County. Elevation, 750 to 1,250 feet.
- Nameless**; post village in Campbell County.
- Namozine**; creek, a small right-hand branch of Appomattox River between Amelia and Dinwiddie counties.
- Namozine**; post village in Amelia County.
- Nandua**; post village in Accomac County.
- Nansemond**; county, situated in the southeastern part of the State on the Atlantic plain. It includes the western portion of the great Dismal Swamp with the bluffs and high ground bordering on the west. The high parts of the county consist of undulating country, rarely exceeding 100 feet in altitude. Area, 393 square miles. Population, 23,078—white, 10,115; negro, 12,962; foreign born, 88. County seat, Suffolk. The mean magnetic declination in 1900 was 3° 27.5'. The mean annual rainfall is 40 to 50 inches, and the temperature 55 to 60°. The county is traversed by the Atlantic Coast Line, the Norfolk and Western, the Seaboard Air Line, the Suffolk and Carolina, the Seaboard and Roanoke, and the Southern railroads.
- Nansemond**; river, heading in the Atlantic plain and flowing northeast into James River just above its mouth. It is navigable to Town Point.
- Naola**; post village in Amherst County.
- Naples**; post village in Highland County.
- Napoleon**; village in Chesterfield County.
- Naptha**; post village in Brunswick County.
- Narcott**; post village in Floyd County.
- Narrow**; creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Narrow Back**; mountains in Rockingham and Augusta counties. Elevation, 2,000 to 2,500 feet.
- Narrow Passage**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.
- Narrows**; post village in Giles County on the New River, Holston and Western and the Norfolk and Western railroads. Altitude, 1,547 feet.
- Narseal**; post village in Amherst County.
- Naruna**; post village in Campbell County on the Norfolk and Western Railway. Altitude, 646 feet.
- Nasbie**; post village in Dickenson County.



- Nash**; post village in Nelson County on the Farmville and Powhatan Railroad.
- Nasons**; post village in Orange County.
- Nassawadox**; post village in Northampton County on the New York, Philadelphia and Norfolk Railroad.
- Nasturtium**; post village in Floyd County.
- Natal**; post village in Pittsylvania County.
- Nathalie**; post village in Halifax County on the Norfolk and Western Railway. Altitude, 510 feet.
- National Soldiers Home**; post village in Elizabeth City County.
- Nat Lick**; branch, a small left-hand tributary to New River in Pulaski County.
- Natural Bridge**; post village in Rockbridge County on the Norfolk and Western and the Chesapeake and Ohio railways. Altitude, 736 feet.
- Navy**; post village in Fairfax County.
- Nawney**; small creek emptying into Back Bay in Princess Anne County.
- Naylors**; post village in Richmond County.
- Neabsco Mills**; post village in Prince William County on the Baltimore and Potomac Railroad.
- Neals**; creek, a small right-hand tributary to Appomattox River in Amelia County.
- Neapsco**; creek, a small right-hand branch of Potomac River in Prince William County.
- Neathery**; post village in Halifax County.
- Neblettes**; post village in Lunenburg County.
- Nebo**; post village in Smyth County.
- Neck**; creek, a small left-hand branch of New River in Pulaski County.
- Neck**; post village in Culpeper County.
- Need**; post village in Franklin County.
- Neenah**; post village in Westmoreland County.
- Neersville**; post village in Loudoun County.
- Negro**; post village in Hanover County.
- Negro**; run, a small left-hand tributary to York River, forming the boundary line between Orange and Louisa counties.
- Negroarm**; post village in Powhatan County on the Farmville and Powhatan Railroad. Altitude, 2,136 feet.
- Neill**; post village in King George County.
- Nellysford**; post village in Nelson County.
- Nelson**; county, situated in the central part of the State in the upper part of the Piedmont region, its western boundary being the summit of the Blue Ridge. The eastern part has a rolling surface, and the western part is greatly broken by short ridges, outliers of the Blue Ridge. It is drained by James River. The altitude varies from a few hundred feet up to 4,000 feet in the Blue Ridge summit. Area, 472 square miles. Population, 16,075—white, 10,403; negro, 5,672; foreign born, 39. County seat, Lovington. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 50 inches, and the temperature 55°. The county is traversed by the Southern and the Chesapeake and Ohio railways.
- Nelson**; ferry across Pamunkey River in Hanover County.
- Nelson**; fork, a small right-hand tributary to James River in Buckingham County.
- Nelson**; post village in Mecklenburg County on the Southern Railway.
- Nelsonia**; post village in Accomac County.
- Nest**; post village in Gloucester County.
- Nester**; post village in Carroll County.
- Nethers**; post village in Madison County.
- Netta**; post village in Brunswick County.
- Nettle**; creek, a small left-hand tributary to James River in Rockbridge County.
- Nettle**; mountains in Rockbridge County.

**Nettleridge**; post village in Patrick County.

**Neva**; village in Franklin County.

**New**; bridge across Chickahominy River in Hanover County.

**New**; river, formed by junction of North and South forks in Ashe County, N. C., flows north through Carroll, Wythe, Pulaski, and Giles counties, Va., into Kanawha River in Fayette County, W. Va.

**New Baltimore**; post village in Fauquier County.

**Newbern**; town in Pulaski County. Population, 152.

**New Canton**; post village in Buckingham County on the Chesapeake and Ohio Railway.

**Newcastle**; town and county seat in Craig County on the Chesapeake and Ohio Railway. Population, 299.

**New Church**; post village in Accomac County.

**Newfound**; river, a small right-hand tributary to York River in Hanover County.

**New Glasgow**; post village in Amherst County on the Southern Railway. Altitude, 714 feet.

**New Hampden**; post village in Highland County.

**New Hope**; town in Augusta County on the Potomac, Fredericksburg and Piedmont Railroad. Population, 124.

**Newington**; post village in Fairfax County.

**New Kent**; county, situated in the eastern part of the State on the Atlantic plain, between York and James rivers. The surface is low and level. Area, 233 square miles. Population, 4,865—white, 1,660; negro, 3,204; foreign born, 10. County seat, New Kent. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio and the Southern railways.

**New Kent**; county seat of New Kent County.

**Newland**; post village in Richmond County.

**New London**; post village in Caroline County.

**Newman Ridge**; mountains in the southeastern part of Lee County, extending southwest into Tennessee.

**Newmans**; post village in Hanover County on the Chesapeake and Ohio Railway.

**Newmarket**; town in Shenandoah County on the Southern Railway. Population, 684.

**New Plymouth**; post village in Lunenburg County.

**Newpoint**; post village in Mathews County.

**Newport**; post village in Giles County.

**Newport News**; city in Warwick County, but independent in government. Population, 19,635. It has a large shipbuilding plant and much commerce.

**Newriver Depot**; post village in Pulaski County on the Norfolk and Western Railway. Altitude, 1,768 feet.

**News Ferry**; post village in Halifax County on the Southern Railway.

**Newsoms**; post village in Southampton County on the Seaboard Air Line Railway.

**New Store**; post village in Buckingham County.

**Newton**; creek, a small right-hand branch of Eastern Branch of Elizabeth River in Princess Anne County.

**Newtown**; post village in King and Queen County.

**New Upton**; post village in Gloucester County.

**Newville**; post village in Prince George County.

**Nibbs**; creek, a small right-hand tributary to Appomattox River in Amelia County.

**Nicholls Knob**; summit in Alleghany County. Elevation, 3,573 feet.

**Nichols**; small right-hand branch of Potomac River in Fairfax County.

**Nick**; post village in Albemarle County.

**Nickelsville**; post village in Scott County.

**Nigger**; creek, a small right-hand branch of James River in Buckingham County.

- Nigger Head**; summit in Nelson County.
- Nigh Way**; small right-hand branch of Slate Creek in Buchanan County.
- Nile**; post village in Prince Edward County.
- Nimmo**; post village in Princess Anne County.
- Nimrod Hall**; post village in Bath County.
- Nindes Store**; post village in King George County.
- Nine Mile Spur**; mountains in Wise County.
- Nineveh**; post village in Warren County.
- Nininger**; village in Bedford County.
- Noble**; village in Wythe County.
- Noel**; post village in Hanover County on the Chesapeake and Ohio Railway.
- Nogo**; post village in Lunenburg County.
- Nokesville**; post village in Prince William County on the Southern Railway.
- Nokomis**; post village in Northumberland County.
- Nola**; post village in Franklin County.
- Noland**; post village in Halifax County.
- Nominygrove**; post village in Westmoreland County.
- Non Intervention**; post village in Lunenburg County.
- Nono**; post village in Lunenburg County.
- Nooning**; creek, a small left-hand branch of Appomattox River in Chesterfield County.
- Nordick**; village in Washington County.
- Nordyke**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.
- Norfolk**; city in Norfolk County, but independent in government, on the Atlantic Coast Line, the Chesapeake and Ohio, the New York, Philadelphia and Norfolk, the Norfolk and Southern, the Norfolk and Western, the Seaboard Air Line, and the Southern railroads. Population, 46,624.
- Norfolk**; county, situated in the southeastern part of the State. It consists entirely of lowland, most of it marshy, and includes the greater portion of the great Dismal Swamp. Little of the county has an altitude above sea exceeding 20 feet. Area, 425 square miles. Population, 50,780—white, 19,113; negro, 31,600; foreign born, 772. County seat, Portsmouth. The mean magnetic declination in 1900 was 4° 7.5'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Atlantic Coast Line, the Seaboard and Roanoke, the Chesapeake and Ohio, the New York, Philadelphia and Norfolk, the Seaboard Air Line, the Southern, and the Norfolk and Western railroads.
- Norma**; post village in Westmoreland County.
- Norman**; post village in Culpeper County.
- Norris**; post village in Fauquier County.
- Norris**; run, a small right-hand branch of New River in Pulaski County.
- North**; bay, a lagoon on the southeastern coast separated from the Atlantic Ocean by a sand bar in Princess Anne County.
- North**; creek, a small right-hand tributary to James River in Appomattox and Botetourt counties.
- North**; mountains in Craig and Botetourt counties. Elevation, 2,000 to 3,000 feet.
- North**; mountains in Rockbridge and Alleghany counties. Elevation, 1,500 to 3,000 feet.
- North**; post village in Mathews County.
- North**; river, a left-hand branch of James River in Rockbridge County. The mean discharge at Glasgow is 985 cubic feet per second.
- North**; river, a left-hand branch of Shenandoah River in Augusta County. The mean discharge at Port Republic is 970½ cubic feet per second.

**North;** run, a small right-hand tributary to Chickahominy River in Henrico County.

**Northampton;** county, situated on the eastern peninsula of Virginia, extending into its southern end at Cape Charles. Its surface is low and level with much marshy land upon either side. Area, 232 square miles. Population, 13,770—white, 6,141; negro, 7,627; foreign born, 81. County seat, Eastville. The mean magnetic declination in 1900 was  $4^{\circ} 17.5'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the New York, Philadelphia and Norfolk Railroad.

**North Anna;** river, a small left-hand tributary to York River, forming the boundary between Orange, Louisa, and Spottsylvania counties.

**Northbranch;** post village in Grayson County.

**North Business;** creek, a small left-hand tributary to Walker Creek in Giles and Bland counties.

**North East;** creek, a left-hand tributary to York River in Spottsylvania County.

**Northfork;** post village in Loudoun County.

**North Garden;** post village in Albemarle County on the Southern Railway. Altitude, 634 feet.

**North Landing;** post village in Princess Anne County.

**North Landing;** river, rising in Princess Anne County and flowing south into Currituck Sound, North Carolina.

**North River;** gap between Narrow Back and Lookout mountains, caused by North River, in Augusta County.

**North River;** post village in Rockingham County.

**North Shady;** branch, a small right-hand tributary to New River in Floyd County.

**Northside;** town in Henrico County. Population, 584.

**North Tazewell;** town in Tazewell County. Population, 320.

**Northumberland;** county, situated in the eastern part of the State on the Atlantic plain, bordering Chesapeake Bay on the south side of the Potomac. Its surface is level and but little elevated above tide. Area, 235 square miles. Population, 9,846—white, 5,680; negro, 4,166; foreign born, 80. County seat, Heathsville. The mean magnetic declination in 1900 was  $4^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ .

**Northview;** post village in Mecklenburg County.

**Northwest;** canal connecting Dismal Swamp Canal with Northwest River in Norfolk County.

**North West;** marshy river rising in Norfolk County and flowing into Currituck Sound, North Carolina.

**Northwest;** post village in Norfolk County on the Norfolk and Southern Railroad.

**Norton;** town in Wise County on the Louisville and Nashville and the Norfolk and Western railroads, and the Wise Terminal Company. Altitude, 2,133 feet. Population, 654.

**Nortonsville;** post village in Albemarle County.

**Norvello;** post village in Mecklenburg County.

**Norwood;** post village in Nelson County on the Chesapeake and Ohio Railway.

**Nottoway;** county, situated in the central part of the State in the Piedmont region.

It has an undulating surface. Altitude, 200 to 500 feet. Area, 304 square miles. Population, 12,366—white, 4,966; negro, 7,400; foreign born, 75. County seat, Nottoway. The mean magnetic declination in 1900 was  $3^{\circ} 35'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western and the Southern railways.

**Nottoway;** county seat in Nottoway County on the Norfolk and Western Railway.

**Nottoway;** river of southeast Virginia; one of the sources of Chowan River.

**Novum;** post village in Madison County.

**Nowlins Mill;** post village in Franklin County.

- Nuckols**; post village in Buckingham County.  
**Nunley**; post village in Russell County.  
**Nunn**; post village in Mecklenburg County.  
**Nurneysville**; post village in Nansemond County.  
**Nurseries**; post village in Lee County.  
**Nutbush**; post village in Lunenburg County.  
**Nutters**; mountains in Craig County. Elevation, 2,000 to 2,500 feet.  
**Nuttree**; creek, a small left-hand tributary to Appomattox River in Chesterfield County.  
**Nuttree**; post village in Chesterfield County.  
**Nuttsville**; post village in Lancaster County.  
**Ny**; river, a small branch of Mattapony River in Spottsylvania and Caroline counties.  
**Nye**; cove, in East River Mountain caused by Cove Creek.  
**Oak**; post village in New Kent County.  
**Oakdale**; post village in Rockbridge County.  
**Oakforest**; post village in Cumberland County.  
**Oakgrove**; post village in Westmoreland County.  
**Oakhall**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.  
**Oakland**; post village in Louisa County.  
**Oaklette**; post village in Norfolk County.  
**Oaklevel**; village in Henry County.  
**Oakley**; post village in Mecklenburg County.  
**Oak Mountain**; branch, a small left-hand tributary to Roanoke River in Bedford County.  
**Oakpark**; post village in Madison County.  
**Oakridge**; post village in Nelson County on the Southern Railway.  
**Oakton**; post village in Fairfax County.  
**Oaktree**; post village in York County.  
**Oakview**; post village in Mecklenburg County.  
**Oakville**; post village in Appomattox County.  
**Oakwood**; village in Rockingham County.  
**Oatlands**; post village in Loudoun County.  
**Obey**; creek, a small left-hand tributary to Clinch River in Scott County.  
**Ocala**; post village in Carroll County.  
**Occoquan**; creek, a small right-hand branch of Potomac River in Prince William County.  
**Occoquan**; town in Prince William County on the Washington Southern Railway. Population, 297.  
**Occupacia**; creek, a small right-hand branch of Rappahannock River in Essex County.  
**Occupacia**; post village in Essex County.  
**Oceana**; post village in Princess Anne County on the Norfolk and Western Railway.  
**Oceanview**; post village in Norfolk County.  
**Ochre**; post village in Chesterfield County on the Farmville and Powhatan Railroad.  
**Ocoonita**; post village in Lee County on the Louisville and Nashville Railroad.  
**Ocran**; post village in Lancaster County.  
**Octagon**; post village in Brunswick County.  
**Octavia**; post village in Buckingham County.  
**Offley**; post village in Hanover County.  
**Ogburn**; post village in Mecklenburg County.  
**Ogden**; post village in Roanoke County.

- Ogle**; creek, a small right-hand tributary to Jackson River in Alleghany County.
- Oglesby**; small right-hand branch of New River in Grayson County.
- Oilville**; post village in Goochland County.
- Oklahoma**; post village in Carroll County.
- Oldchurch**; post village in Hanover County.
- Oldenplace**; post village in Dinwiddie County.
- Oldfield**; post village in Charles City County.
- Oldhams**; post village in Westmoreland County.
- Old Mount Airy**; summit in Wythe County. Elevation, 2,500 feet.
- Old Town**; creek, a small right-hand tributary to James River in Chesterfield County.
- Oldtown**; post village in Grayson County. Altitude, 2,485 feet.
- Old Woman**; creek, a small right-hand tributary to Roanoke River in Pittsylvania County.
- Oleako**; post village in Cumberland County.
- Olga**; post village in Amelia County.
- Olinger**; gap in Stone Mountain made by Powell River.
- Olinger**; post village in Lee County on the Louisville and Nashville Railroad.
- Olive**; post village in Culpeper County.
- Oliver**; mountains in Alleghany County. Elevation, 2,500 to 3,500 feet.
- Oliver**; post village in Hanover County.
- Oliveville**; post village in Nottoway County.
- Ollie**; post village in Alleghany County.
- Olo**; post village in Lunenburg County.
- Olympia**; post village in Smyth County.
- Oma**; post village in Culpeper County.
- Omega**; post village in Halifax County.
- Omohundro**; post village in Buckingham County.
- Onan**; post village in Nelson County.
- Onancock**; town in Accomac County. Population, 938.
- Onawan**; village in Rockingham County.
- O'Neal**; post village in Floyd County.
- Oneida**; branch, a small right-hand tributary to Wolf Creek in Tazewell County.
- One Mile**; creek, a small left-hand tributary to James River in Henrico County.
- Onion Mountain**; summit in Bedford County. Elevation, 3,828 feet.
- Onley**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.
- Ontario**; post village in Charlotte County on the Southern Railway.
- Onville**; post village in Stafford County.
- Opal**; post village in Fauquier County.
- Open**; fork, a small left-hand tributary to Russell Fork, rising in Dickenson County.
- Opequon**; creek, a left-hand branch of Shenandoah River in Clarke and Berkeley counties.
- Opequon**; post village in Frederick County.
- Ophelia**; post village in Northumberland County.
- Opie**; post village in Mecklenburg County.
- Opossum**; small right-hand branch of North Fork of Holston River, rising in Hawkins County, Tenn.
- Opossum**; creek, a small right-hand branch of James River in Campbell County.
- Opossum Hollow**; small left-hand tributary to New River in Pulaski County.
- Ora**; post village in Washington County.
- Oradell**; post village in Grayson County.
- Oral Oaks**; post village in Lunenburg County.
- Oranda**; post village in Shenandoah County.

**Orange;** county, situated in the central part of the State in the Piedmont region. It has a rolling surface broken only by a few ridges, outliers of the Blue Ridge. The altitude ranges from 200 to 300 feet up to 1,200 feet. Area, 349 square miles. Population, 12,571—white, 7,050; negro, 5,519; foreign born, 60; county seat, Orange. The mean magnetic declination in 1900 was 3° 35'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio, the Potomac, Frederick and Piedmont, and the Southern railroads.

**Orange;** county seat of Orange County on the Chesapeake and Ohio, the Potomac, Fredericksburg and Piedmont, and the Southern railroads. Altitude, 506 feet. Population, 536.

**Orb;** post village in Lunenburg County.

**Orbit;** post village in Isle of Wight County.

**Orchid;** post village in Louisa County.

**Ordsburg;** post village in Brunswick County.

**Ordway;** post village in Carroll County.

**Orebank;** post village in Buckingham County.

**Ore Bank Mountains;** summits in Botetourt County.

**Oreton;** post village in Wise County on the Virginia and Southwestern Railway.

**Orgainsville;** post village in Mecklenburg County.

**Orion;** post village in Greensville County.

**Oriakany;** post village in Botetourt County on the Chesapeake and Ohio Railway.

**Orkney Springs;** post village in Shenandoah County.

**Orlando;** post village in Prince William County.

**Orlean;** post village in Fauquier County.

**Oronoco;** post village in Amherst County.

**Orrix;** post village in Bedford County.

**Ortis;** post village in Albemarle County.

**Osage;** post village in Patrick County.

**Osborn;** small left-hand branch of Slate Creek in Buchanan County.

**Osborn;** ford in Scott County.

**Osborns Gap;** post village in Dickenson County.

**Osceola;** village in Washington County.

**Oscer;** village in Floyd County.

**Oslins;** post village in Buckingham County.

**Osso;** post village in King George County.

**Othma;** post village in Goochland County.

**Otho;** post village in Floyd County.

**Otter;** branch, a small left-hand tributary to Appomattox River in Chesterfield County.

**Otter;** creek, a small left-hand tributary to James River in Amherst County.

**Otter;** river, a left-hand tributary to Roanoke River, formed by two forks, North and South, in Bedford and Campbell counties.

**Otterdale;** post village in Chesterfield County.

**Otterhill;** village in Bedford County.

**Otter River;** post village in Campbell County on the Southern Railway. Altitude, 665 feet.

**Otterview;** post village in Bedford County.

**Ottobine;** post village in Rockingham County.

**Ottoman;** post village in Lancaster County.

**Otway;** post village in Nelson County.

**Oty;** post village in Montgomery County.

**Oven Top;** summit in Rappahannock County.

**Overall**; post village in Page County on the Norfolk and Western Railway. Altitude, 659 feet.

**Overall**; run, a small right-hand tributary to Shenandoah River in Page County.

**Overland**; post village in Mecklenburg County.

**Overly**; post village in Prince Edward County.

**Overton**; post village in Albemarle County.

**Owens**; creek, a small left-hand branch of James River in Nelson County.

**Owens**; creek, a small right-hand tributary to York River in Louisa County.

**Owens**; post village in King George County on the Southern Railway.

**Owenton**; post village in King and Queen County.

**Owl**; creek, a small right-hand branch of Meherrin River in Lunenburg County.

**Owl**; small creek in Princess Anne County, emptying into Atlantic Ocean through Rudy Inlet.

**Owl**; run, a small right-hand tributary to Potomac River in Fauquier County.

**Oxalis**; post village in King and Queen County.

**Ozeana**; post village in Essex County.

**Paces**; post village in Halifax County on the Southern Railway.

**Paddy**; creek, a small left-hand tributary to James River in Albemarle County.

**Paddy**; mountains in Frederick County, which extend into Shenandoah County, W. Va. Elevation, 2,500 feet.

**Paddy**; run, a small left-hand tributary to Shenandoah River in Frederick County.

**Pads**; creek, a small left-hand tributary to James River in Bath County.

**Paeonian Springs**; post village in Loudoun County on the Southern Railway.

**Page**; county, situated in the northwestern part of the State. It includes the valley of the South Fork of the Shenandoah, extending from the summit of Massanutten Mountain on the west to that of the Blue Ridge on the east. The altitude ranges from 600 feet along the Shenandoah to 4,000 feet on Stony Man and Hawks Bill summits of the Blue Ridge. Area is 317 square miles. Population, 13,794—white, 12,354; negro, 1,440; foreign born, 31. County seat, Luray. The mean magnetic declination in 1900 was 3° 50'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.

**Page Mountain**; summit in Amherst County.

**Paige**; post village in Caroline County.

**Paine**; run, a small right-hand tributary to Shenandoah River in Augusta County.

**Paineville**; post village in Amelia County.

**Paintbank**; post village in Craig County.

**Painter**; creek, a small left-hand branch of New River in Carroll County.

**Painter**; post village in Accomac County.

**Paint Lick**; mountains in Tazewell County. Elevation, 2,500 to 3,500 feet.

**Paintlick**; post village in Tazewell County.

**Palace**; post village in Dickenson County.

**Palestine**; post village in Washington County.

**Falls**; post village in King William County.

**Palmer**; post village in Lancaster County.

**Palmer Springs**; post village in Mecklenburg County.

**Palmetto**; post village in Patrick County.

**Palmyra**; county seat of Fluvanna County.

**Paloalto**; post village in Highland County.

**Pampa**; post village in Gloucester County.

**Pamplin City**; post village in Appomattox County on the Norfolk and Western Railway. Altitude, 679 feet.

**Pamunky**; post village in Orange County.



- Pamunkey**; river heading in the Piedmont region and flowing southeast to its junction with the Mattaponi, forming York River.
- Pamunsend**; creek, a small right-hand tributary to Rappahannock River in Caroline County.
- Panther**; creek, a small right-hand tributary to New River in Carroll County.
- Panther**; gap in Mill Mountains, caused by a creek in Bath County. Altitude, 1,594 feet.
- Panther**; mountain in Rockbridge County.
- Panther**; summit in Amherst County. Elevation, 1,500 to 2,000 feet.
- Panther Mountain**; summit in Botetourt County.
- Panther Ridge**; mountains in Alleghany County. Elevation, 2,000 to 2,500 feet.
- Paris**; mountains in Montgomery County. Elevation, 1,500 to 3,000 feet.
- Paris**; post village in Fauquier County.
- Parishville**; post village in Frederick County.
- Parites**; post village in Madison County.
- Park**; post village in Grayson County.
- Parker**; post village in Spottsylvania County on the Potomac, Fredericksburg and Piedmont Railroad.
- Parkins Mill**; post village in Frederick County.
- Parksley**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.
- Parnassus**; post village in Augusta County.
- Parr**; post village in Botetourt County on the Chesapeake and Ohio Railway.
- Parridge**; run, a small left-hand branch of James River in Amherst County.
- Parrotts**; post village in Albemarle County.
- Parsells**; post village in Franklin County.
- Partlow**; post village in Spottsylvania County.
- Pass**; run, a small right-hand tributary to Shenandoah River in Page County.
- Passage**; creek, a small left-hand tributary to Shenandoah River in Shenandoah and Page counties.
- Passapatanzy**; post village in King George County.
- Passing**; post village in Caroline County.
- Pastoria**; post village in Accomac County.
- Patch**; creek, a small right-hand tributary to Powell River in Wise County.
- Path Ridge**; mountains in Rockingham County.
- Patrick**; county, which lies along the southern boundary of the State, its north-western boundary being the summit of the Blue Ridge escarpment. Its surface is rolling and broken, with a steep rise upon the southwest. Area, 489 square miles. Population, 15,403—white, 13,779; negro, 1,624. County seat, Stuart. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Danville and Western Railway.
- Patrick Springs**; post village in Patrick County on the Danville and Western Railway. Altitude, 1,305 feet.
- Patterson**; creek, a small right-hand tributary to James River in Botetourt County.
- Patterson**; mountains in Botetourt County. Elevation, 1,500 to 2,000 feet.
- Patterson**; post village in Wythe County on the Norfolk and Western Railway. Altitude, 1,132 feet.
- Patti**; post village in Franklin County.
- Pattonsville**; post village in Scott County. Altitude, 1,710 feet.
- Paulington**; village in Rockingham County.
- Paul Mountain**; summit in Amherst County. Elevation, 1,500 feet.
- Pauls**; creek, a small left-hand tributary to Yadkin River in Patrick County.

**Pauls Crossroads**; post village in Essex County.

**Paw Paw**; creek, a left-hand branch of Knox Creek, formed by two forks, Left and Right, in Buchanan County.

**Pax**; post village in Floyd County.

**Paxon**; post village in Loudoun County.

**Payne**; creek, a small right-hand tributary to James River in Buckingham and Cumberland counties.

**Paynes**; post village in Fluvanna County on the Chesapeake and Ohio Railway.

**Peach Bottom**; creek, a small right-hand branch of New River in Grayson County.

**Peach Bottom**; post village in Grayson County.

**Peach Grove Hill**; summit in Fairfax County.

**Peak**; creek, a small left-hand branch of New River, rising in Wythe County.

**Peak**; summit in Blue Ridge in Rappahannock County. Elevation, 2,953 feet.

**Peak**; summit in Massanutten Mountains in Rockingham County.

**Peak**; summit in Bedford County. Elevation, 3,875 feet.

**Peak**; summit in Tazewell County. Elevation, 4,230 feet.

**Peak Creek Knob**; summit in Draper Mountains. Elevation, 3,374 feet.

**Peakes Turnout**; post village in Hanover County.

**Peaks of Otter**; mountains in Bedford County. Elevation, 1,500 to 4,000 feet

**Peaksville**; post village in Bedford County.

**Peanut**; post village in Sussex County.

**Pearch**; post village in Bedford County on the Chesapeake and Ohio Railway.

**Pearis**; mountains in Giles County. Elevation, 2,000 to 3,500 feet.

**Pearisburg**; town and county seat of Giles County. Population, 464.

**Peatross**; post village in Pittsylvania County.

**Peavine Mountain**; summit in Nelson County.

**Peck**; post village in Carroll County.

**Peddler**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Pedlar**; gap in Amherst County.

**Pedlar**; river, a small left-hand branch of James River in Amherst County.

**Pedlar Hills**; mountains in Montgomery County. Elevation, 1,500 to 2,000 feet.

**Pedlar Mills**; post village in Amherst County.

**Pedlars**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Pedro**; post village in Essex County.

**Peeds**; post village in Westmoreland County.

**Peers**; post village in Goochland County.

**Pellitory**; point extending into Back Bay in Princess Anne County.

**Pelton**; post village in Shenandoah County.

**Pemberton**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Pembroke**; post village in Giles County on the Norfolk and Western Railway.  
Altitude, 1,618 feet.

**Pender**; post village in Fairfax County.

**Pendletons**; post village in Louisa County on the Chesapeake and Ohio Railway

**Penhook**; post village in Franklin County on the Southern Railway.

**Penicks**; post village in Bedford County.

**Penlan**; post village in Buckingham County on the Chesapeake and Ohio Railway.

**Penn**; small right-hand branch of Cripple Creek in Wythe County.

**Pennington**; gap made by the North Fork of Powell River in Stone Mountains.

**Pennington Gap**; town in Lee County on the Louisville and Nashville Railroad.  
Population, 399.

**Penn Laird**; post village in Rockingham County on the Chesapeake Western  
Railway.

**Penny**; post village in Mathews County.

- Penola**; post village in Caroline County on the Potomac, Fredericksburg and Piedmont Railroad.
- Penrith**; post village in Cumberland County.
- Penrose**; post village in Augusta County.
- Peola Mills**; post village in Madison County.
- Peppers**; ferry over New River in Pulaski County.
- Pera**; post village in Amherst County.
- Perdue**; post village in Montgomery County on the Farmville and Powhatan Railroad.
- Perkinsville**; post village in Goochland County.
- Pernello**; post village in Franklin County.
- Perriwinkle**; branch, a small right-hand tributary to New River in Carroll and Pulaski counties.
- Perrows**; post village in Campbell County.
- Perrowville**; post village in Bedford County.
- Perry**; creek, a small left-hand tributary to James River in Albemarle County.
- Perry**; mountain in Nelson County.
- Perth**; post village in Halifax County.
- Peter**; creek, a small left-hand branch of Roanoke River in Roanoke County.
- Peters**; creek, a small right-hand branch of James River in Bedford County.
- Peters**; creek, a small left-hand tributary to Roanoke River in Roanoke County.
- Peters**; mountains in Giles County. Elevation, 2,500 to 3,000 feet.
- Peters Creek**; post village in Patrick County.
- Petersburg**; city, situated in Dinwiddie County, but independent in government, on the Atlantic Coast Line, the Norfolk and Western, and the Seaboard Air Line railroads. Population, 21,810.
- Peters Hill**; summit in Craig County. Elevation, 2,000 feet.
- Peters Ridge**; mountains in Alleghany County.
- Petites**; gap in Blue Ridge in Bedford County.
- Petunia**; village in Wythe County.
- Peytonsbury**; post village in Pittsylvania County.
- Phelps**; branch, a small right-hand tributary to James River in Appomattox County.
- Phillipa**; small left-hand branch of Middle Fork of Holston River in Smyth County.
- Phillips**; post village in Floyd County on the Virginia and Southwestern Railway.
- Phillis**; post village in Mecklenburg County.
- Philomont**; post village in Loudoun County.
- Philpott**; post village in Henry County.
- Phoebus**; town in Elizabeth City County on the Chesapeake and Ohio Railway. Population, 2,094.
- Phone**; post village in Goochland County.
- Pianketank**; river, heading in Essex County and flowing southeast to Chesapeake Bay.
- Pickaway**; post village in Pittsylvania County.
- Piedmont**; post village in Bedford County.
- Pig**; point of land in Nansemond County, extending into James River.
- Pig**; river, a right-hand tributary to Roanoke River in Pittsylvania County.
- Pig**; run, a small left-hand tributary to James River in Bath County.
- Pigeon**; creek, a small right-hand branch of Powell River.
- Pigeon**; run, a small left-hand tributary to York River in Spottsylvania County.
- Pigg**; river, a right-hand branch of Roanoke River in Pittsylvania County.
- Pig Nut**; mountains in Fauquier County. Elevation, 750 to 1,000 feet.
- Pig River**; post village in Franklin County.
- Pike**; post village in Chesterfield County.

- Pike Knob**; summit in Carroll County. Elevation, 3,200 feet.  
**Pilkinton**; post village in Powhatan County.  
**Pilot**; mountains in Montgomery County. Elevation, 2,000 to 2,500 feet.  
**Pilot**; post village in Montgomery County.  
**Pilot Knob**; summit in Grayson County. Elevation, 3,021 feet.  
**Pilot Mountain**; summit in Appomattox County.  
**Pilot Mountain**; summit in Bedford County.  
**Pimmit**; run, a small right-hand branch of Potomac River in Fairfax County.  
**Pinckney**; post village in Highland County.  
**Pine**; branch, a small right-hand tributary to New River in Carroll County.  
**Pine**, fork, a small right-hand tributary to New River in Carroll and Floyd counties.  
**Pine**; mountains in Botetourt and Rockbridge counties. Elevation, 1,500 to 2,500 feet.  
**Pine**; mountains in Washington County. Elevation, 1,500 to 2,000 feet.  
**Pine**; mountains in the southern part of Scott County, extending into Hawkins County, Tenn.  
**Pine**; post village in Pulaski County.  
**Pine**; run, a small left-hand branch of New River in Wythe and Pulaski counties.  
**Pineapple**; post village in Spottsylvania County.  
**Pine Ridge**; mountains in Botetourt County. Elevation, 1,500 feet.  
**Pine Ridge**; mountains in Frederick County. Elevation, 1,000 feet.  
**Pine Ridge**; mountains in Wythe County. Elevation, 2,500 feet.  
**Pine Ridge**; summits in Augusta County.  
**Pinero**; post village in Gloucester County.  
**Pine Spur**; gap in the Blue Ridge in Franklin County.  
**Pine Swamp**; creek, a small left-hand tributary to New River, rising in Grayson County.  
**Pinetop**; post village in Orange County.  
**Pinetta**; post village in Gloucester County.  
**Pineview**; post village in Fauquier County.  
**Piney**; creek, a small left-hand tributary to James River in Albemarle County.  
**Piney**; mountains in Bath County.  
**Piney**; mountains in Bedford County. Elevation, 2,000 feet.  
**Piney**; mountains in Craig County.  
**Piney**; river, a small left-hand tributary to James River between Nelson and Amherst counties.  
**Piney**; run, a small right-hand branch of Potomac River in Loudoun County.  
**Piney Knob**; summit in Rockbridge County.  
**Piney Mountain**; summit in Amherst County.  
**Piney Mountain**; summit in Appomattox County.  
**Piney Mountain**; summit in Page County. Elevation, 1,500 feet.  
**Pinnacle**; post village in Carroll County.  
**Pinnacle**; summit in Cumberland Mountains in Lee County. Elevation, 2,500 feet.  
**Pinner**; point on Elizabeth River in Norfolk County.  
**Pinners**; post village in Norfolk County.  
**Pinopolis**; post village in Southampton County.  
**Piper**; gap in Carroll County.  
**Piper**; gap in mountains in Patrick County.  
**Pipers Gap**, post village in Carroll County.  
**Pisgah**; post village in Tazewell County on the Norfolk and Western Railway. Altitude, 2,344 feet.  
**Pistol**; small left-hand branch of Levisa Fork in Buchanan County.  
**Pittston**; post village in Pittsylvania County.

**Pittsville**; post village in Pittsylvania County on the Southern Railway.

**Pittsylvania**; county, situated in the southern part of the State on the Atlantic plain, the northern limit being Roanoke River. The surface is undulating. The altitude ranges from 4,000 to 1,200 feet. Area, 986 square miles. Population, 46,894—white, 25,605; negro, 21,289; foreign born, 63. County seat, Chatham. The mean magnetic declination in 1900 was  $1^{\circ} 47.5'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern, the Danville and Western, and the Norfolk and Western railways.

**Pizarro**; post village in Floyd County.

**Plainview**; post village in King and Queen County.

**Plank Cabin**; creek, a small left-hand tributary to Clinch River in Scott County.

**Plantersville**; post village in Lunenburg County.

**Plasterburg**; post village in Smyth County.

**Plasterco**; post village in Washington County.

**Plato**; post village in Halifax County.

**Pleasantgrove**; post village in Lunenburg County.

**Pleasanthill**; post village in Tazewell County.

**Pleasantridge**; post village in Princess Anne County on the Norfolk and Southern Railroad.

**Pleasantshade**; post village in Greensville County on the Southern Railway.

**Pleasant Valley**; post village in Loudoun County on the Baltimore and Ohio Railroad. Altitude, 1,248 feet.

**Pleasantview**; post village in Amherst County.

**Pleasure House**; creek, a small left-hand branch of Lynn Haven River in Princess Anne County.

**Pluck**; post village in King George County.

**Plum**; branch, a small left-hand tributary to Roanoke River in Campbell County.

**Plum**; creek, a small left-hand branch of Clinch River in Tazewell County.

**Plum**; creek, a small right-hand branch of New River, rising in Montgomery County.

**Plumbranch**; post village in Campbell County.

**Plumpoint**; post village in New Kent County.

**Plymale**; post village in Bedford County.

**Po**; river, a small right-hand branch of Mattaponi River in Spotsylvania and Caroline counties.

**Poages Mill**; post village in Roanoke County.

**Poague**; run, a small left-hand tributary to James River in Rockbridge County.

**Pocahontas**; town in Tazewell County on the Norfolk and Western Railway. Altitude, 2,320 feet. Population, 2,789.

**Poco**; village in Shenandoah County.

**Pocoshock**; creek, a small right-hand tributary to James River in Chesterfield County.

**Poge Mill**; creek, a small left-hand branch of South Fork of Holston River in Washington County.

**Pohick**; bay, an arm of the Potomac River, extending into Fairfax County.

**Pohick**; run, a small right-hand tributary to Potomac River in Fairfax County.

**Poindexter**; post village in Louisa County.

**Point Eastern**; post village in Caroline County.

**Point Lookout**; mountains in Grayson County. Elevation, 3,000 to 4,623 feet.

**Point Pleasant**; post village in Bland County on the Pittsburg, Shawmut and Northern Railroad.

**Point Truth**; post village in Russell County.

**Pole Cat**; creek, a small left-hand tributary to New River in Wythe County.

**Polegreen**; post village in Hanover County.

**Pollard**; post village in Amelia County.

- Polo**; post village in King and Queen County.
- Pond**; gap in Little North Mountains in Augusta County. Altitude, 1,682 feet.
- Pond**; mountain in Smyth County. Elevation, 2,500 to 3,000 feet.
- Pond**; mountains in Fauquier County. Elevation, 1,500 to 2,500 feet.
- Pond**; run, a small right-hand tributary to Shenandoah River in Augusta County.
- Pondgap**; post village in Augusta County.
- Pond Hill**; summit in Montgomery County.
- Poney**; creek, a small right-hand branch of Pamunkey River in Hanover County.
- Pons**; post village in Isle of Wight County.
- Pony**; summits in Culpeper County. Elevation, 500 to 750 feet.
- Poo**; run, a small right-hand tributary to James River in Dinwiddie County.
- Poole**; post village in Brunswick County on the Norfolk and Ocean View Railroad.
- Poolville**; post village in Halifax County.
- Poor**; mountain in Roanoke and Montgomery counties. Elevation, 2,500 to 3,900 feet.
- Poor**; valley in Tazewell County.
- Poor**; valley lying along Clinch Mountain in Scott and Washington counties.
- Poor**; valley lying between Poor Valley Ridge and Stone Mountain in Lee County.
- Poore**; small right-hand branch of New River in Carroll County.
- Poor Valley Ridge**; mountains extending northeast and southwest in Lee County.
- Pope**; post village in Southampton County, on the Southern Railway.
- Pope Knob**; summit in Carroll County. Elevation, 3,039 feet.
- Popham**; run, a small right-hand tributary to Rappahannock River in Madison County.
- Poplar**; branch, a small right-hand tributary to New River in Montgomery County.
- Poplar**; creek, a small left-hand branch of Levisa Fork, rising in Buchanan County.
- Poplar**; post village in Nelson County.
- Poplar Camp**; creek, a small right-hand tributary to New River in Wythe and Carroll counties.
- Poplar Camp**; mountains in Carroll and Wythe counties. Elevation, 2,500 to 3,161 feet.
- Poplarhill**; post village in Giles County.
- Poplar Knob**; summit in Carroll County. Elevation, 3,166 feet.
- Poplarmount**; post village in Greenesville County.
- Poquoson**; post village in York County.
- Porpoise**; point projecting into Back Bay in Princess Anne County.
- Port**; post village in Madison County.
- Port Conway**; post village in King George County.
- Porter**; ferry over New River in Wythe County.
- Porterfield**; run, a small right-hand tributary to Shenandoah River in Augusta County.
- Porters**; mountains in Botetourt and Bedford counties. Elevation, 1,500 to 2,000 feet.
- Port Haywood**; post village in Mathews County.
- Port Norfolk**; post village in Norfolk County on the Atlantic Coast Line Railroad.
- Port Republic**; post village in Rockingham County.
- Port Royal**; town in Caroline County on the Norfolk and Western Railway. Altitude, 1,093 feet. Population, 193.
- Portsmouth**; county seat of Norfolk County, but independent in government, on the Atlantic Coast Line, the Chesapeake and Ohio, the New York, Philadelphia and Norfolk, and the Seaboard Air Line railroads. Population, 17,427.
- Port Walthall**; post village in Chesterfield County.
- Posey**; post village in Floyd County.
- Possum**; small creek in Hanover County.

- Possum**; run, a small left-hand tributary to James River in Rockbridge County.
- Possum Jaw**; creek, a small right-hand branch of North Fork of Holston River in Smyth County.
- Postoak**; post village in Spottsylvania County.
- Potato**; post village in Grayson County.
- Potato**; run, a small right-hand tributary to Rappahannock River in Culpeper County.
- Potato Hill**; summit in Amherst County. Elevation, 1,000 feet.
- Potato Hill**; summit in Wise County.
- Poteet**; ford of Powell River in Lee County.
- Potomac**; creek, a small right-hand branch of Potomac River in Stafford County.
- Potomac**; post village in Prince William County.
- Potomac**; river of Maryland, Virginia, and West Virginia. It heads in West Virginia, in North and South branches. The North Branch rises near the Fairfax Stone, the southwestern point of Maryland, and flows northeast to Cumberland, where it turns to a southeastern course. A few miles farther down it is joined by the South Branch, and at Harpers Ferry, where it cuts through the Blue Ridge, by the Shenandoah; thence the river flows in a generally southeasterly course to its mouth in Chesapeake Bay at Point Lookout. The area of its drainage basin is 14,479 square miles, including the Shenandoah. It is navigable to Little Falls, in the District of Columbia.
- Potomac Mills**; post village in Westmoreland County.
- Potts**; creek, a right-hand branch of Jackson River in Alleghany County.
- Potts**; mountains in Craig and Alleghany counties. Elevation, 2,500 to 3,822 feet.
- Potts**; post village in Amherst County.
- Potts Creek**; post village in Alleghany County.
- Poulson**; post village in Accomac County.
- Pound**; gap in Pine Mountains in Wise County.
- Pound**; post village in Wise County.
- Pound**; river, a left-hand branch of Russell Fork, rising in Wise County.
- Pounding Mill**; creek, a small left-hand branch of Clinch River in Tazewell County.
- Pound Mill**; creek, a small left-hand branch of Knox Creek, rising in Buchanan County.
- Pounding Mill**; creek, a small left-hand tributary to James River in Alleghany County.
- Pounding Mill**; post village in Tazewell County on the Norfolk and Western Railway. Altitude, 2,140 feet.
- Poverty**; creek, a small right-hand tributary to New River in Pulaski and Montgomery counties.
- Poverty**; post village in Highland County.
- Powcan**; post village in King and Queen County.
- Powell**; gap in the Blue Ridge in Rockingham County.
- Powell**; gap in the Blue Ridge, caused by McFalls Branch, in Botetourt County. Altitude 1,906 feet.
- Powell**; mountains, extending from the southern part of Wise County along the boundary line of Scott and Lee counties into Hancock County, Tenn.
- Powell**; river, rising in Wise County and flowing southwest through Lee County into Tennessee, where it flows into Clinch River. It is formed by two forks, North and South.
- Powell Mountain**; summit in Nelson County.
- Powells**; creek, a small right-hand branch of Potomac River in Prince William County.
- Powells**; mountains in Shenandoah County.
- Powellton**; post village in Brunswick County.
- Powers**; post village in Clarke County.

**Powhatan**; county, situated in the central part of the State in the Piedmont region. It is drained by James River, which flows along its southern boundary. The altitude ranges from 200 to 400 feet. Area, 284 square miles. Population, 6,824—white, 2,343; negro, 4,481; foreign born, 43. County seat, Powhatan. The mean magnetic declination in 1900 was  $3^{\circ} 35'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Farmville and Powhatan Railroad.

**Powhatan**; county seat of Powhatan County on the Farmville and Powhatan Railroad.

**Powhite**; creek, a small left-hand branch of Chickahominy River in Hanover County.

**Powhite**; creek, a small right-hand branch of James River in Chesterfield County.

**Prater**; creek, a small right-hand branch of Roanoke River in Franklin County.

**Prater**; post village in Buchanan County.

**Pratts**; post village in Madison County.

**Preacher**; creek, a small right-hand tributary to Powell River in Wise County.

**Preacher**; post village in Wise County on the Interstate Railroad.

**Prease**; village in Bedford County.

**Preston**; post village in Henry County on the Danville and Western Railroad. Altitude, 930 feet.

**Preston Knob**; summit in Franklin County. Elevation, 1,331 feet.

**Pretlow**; post village in Southampton County.

**Pretty**; creek, a small left-hand branch of James River in Botetourt County.

**Price**; mountains in Montgomery County. Elevation, 2,000 feet.

**Prices**; ford of Jackson River in Botetourt County.

**Prices**; mountains in Botetourt County. Elevation, 2,000 to 2,500 feet.

**Prices Fork**; post village in Montgomery County.

**Priddys**; post village in Albemarle County.

**Pridemore**; village in Lee County.

**Priest**; summit in Nelson County. Elevation, 4,080 feet.

**Prillamans**; post village in Franklin County.

**Prince**; post village in King and Queen County.

**Prince Edward**; county, situated in the central part of the State in the Piedmont region. The surface is undulating and the altitude ranges from 300 to 600 feet. Area, 345 square miles. Population, 15,045—white, 5,276; negro, 9,769; foreign born, 117. County seat, Farmville. The mean magnetic declination in 1900 was  $3^{\circ}$ . The mean annual rainfall is 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern, the Farmville and Powhatan, and the Norfolk and Western railroads.

**Prince George**; county, situated in the central part of the State on the Atlantic plain. It has a rolling surface with much marsh along the streams. The altitude ranges in the highest points to about 200 feet. Area, 302 square miles. Population, 7,752—white, 2,886; negro, 4,858; foreign born, 282. County seat, Prince George. The mean magnetic declination in 1900 was  $3^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western and the Atlantic Coast Line railroads.

**Prince George**; county seat of Prince George County.

**Princess Anne**; county, situated in the southeastern part of the State. It borders on the Atlantic Ocean and North Carolina, lying east of the great Dismal Swamp. It contains much marsh land, and on the whole lies very low, little of it exceeding 20 to 25 feet above sea level. Area, 285 square miles. Population, 11,192—white, 5,505; negro, 5,687; foreign born, 74. County seat, Princess Anne. The mean magnetic declination in 1900 was  $4^{\circ} 15'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Southern and the Virginia Beach railroads.



**Princess Anne;** county seat of Princess Anne County on the Norfolk and Southern Railroad.

**Prince William;** county, situated in the eastern part of the State in the Piedmont region. It has an undulating surface, rising in the western edge to the summit of the Blue Ridge, which forms the boundary. Most of the area of the county lies between 200 and 500 feet in altitude. Area, 353 square miles. Population, 11,112—white, 8,240; negro, 2,871; foreign born, 167. County seat, *Manassas*. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 45 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio, the Southern, and the Richmond, Fredericksburg and Potomac railroads.

**Printz Mill;** post village in Page County.

**Prise House Mountain;** summit in Botetourt County.

**Proffit;** post village in Albemarle County on the Southern Railway.

**Progress;** village in Franklin County.

**Prospect;** post village in Prince Edward County on the Norfolk and Western Railway. Altitude, 573 feet.

**Prospect Dale;** post village in Giles County.

**Prospect Hill;** post village in Fairfax County.

**Providence Forge;** post village in New Kent County on the Chesapeake and Ohio Railway.

**Prunty's;** village in Henry County.

**Pryor;** post village in Amherst County.

**Puckell;** creek, a small left-hand branch of Straight Creek in Lee County.

**Puckett;** post village in Patrick County.

**Pughs;** post village in Norfolk County on the Atlantic Coast Line Railroad.

**Pughs;** run, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Pughs Run;** post village in Shenandoah County.

**Pulaski;** county, situated in the western part of the State in the Appalachian Valley. It is limited on the east by New River, the northwest by Walker Mountain, and on the southwest by an arbitrary line. Its surface is undulating, with a few northeast and southwest ridges separated by valleys. The altitude ranges from 1,700 to 3,000 feet. Area, 338 square miles. Population, 14,609—white, 11,372; negro, 3,237; foreign born, 88. County seat, *Pulaski City*. The mean magnetic declination in 1900 was 1° 15'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.

**Pulaski City;** county seat of Pulaski County on the Norfolk and Western Railway. Altitude, 1,904 feet. Population, 2,813.

**Pullens;** post village in Pittsylvania County.

**Pulliam;** branch, a small left-hand tributary to Roanoke River in Campbell County.

**Punch Bowl Mountain;** summit in the Blue Ridge.

**Pungo;** ferry over North Landing River between Norfolk and Princess Anne counties.

**Pungo;** post village in Princess Anne County on the Norfolk and Southern Railroad.

**Pungoteague;** post village in Accomac County.

**Purcellville;** post village in Loudoun County on the Southern Railway. Altitude, 553 feet.

**Purchase;** post village in Scott County.

**Purchase Ridge;** mountains in Scott County.

**Purgatory;** creek, a small left-hand branch of James River in Botetourt County.

**Purgatory;** mountains in Botetourt County. Elevation, 1,500 to 2,500 feet.

**Purity;** village in Franklin County.

**Purvis;** gap in Nelson County.

**Push;** post village in Mecklenburg County.

**Putneys;** post village in Prince Edward County.

**Quail**; post village in Louisa County.

**Quantico**; creek, a small right-hand branch of Potomac River in Prince William County.

**Queensberry Knob**; summit in Carroll County. Elevation, 2,935 feet.

**Queens Knob**; summit in Wythe County. Elevation, 3,000 to 3,204 feet.

**Quicksburg**; post village in Shenandoah County on the Southern Railway.

**Quillin**; post village in Norfolk County.

**Quinby**; post village in Accomac County.

**Quinque**; post village in Greene County.

**Quinton**; post village in New Kent County on the Southern Railway.

**Quoit**; post village in Floyd County.

**Rabat**; post village in Halifax County.

**Raccoon**; creek, a small left-hand tributary to James River in Fluvanna County.

**Raccoon**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Raccoon Ford**; post village in Culpeper County.

**Race**; fork, a small left-hand branch of Knox Creek, rising in Buchanan County.

**Radcliffe**; post village in Mecklenburg County.

**Radford**; small right-hand branch of New River, rising in Pulaski County.

**Radford**; city in Montgomery County, but independent in government, on the Norfolk and Western Railway. Altitude, 1,773 feet. Population, 3,344.

**Radford Furnace**; post village in Pulaski County.

**Radfords**; ford in Roanoke River, Franklin County.

**Radiant**; post village in Madison County.

**Ragged**; marshy island in Back Bay in Princess Anne County.

**Ragged**; mountains in Albemarle County. Elevation, 1,000 to 1,500 feet.

**Ragged**; mountains in Madison County. Elevation, 2,000 to 3,000 feet.

**Ragged**; summit in Brattans Mountain, Rockbridge County.

**Rainbow**; post village in Rockingham County.

**Raines**; post village in Cumberland County on the Farmville and Powhatan Railroad. Altitude, 524 feet.

**Rainey**; pond in the eastern part of Princess Anne County.

**Rainswood**; post village in Northumberland County.

**Ballings**; run, a small left-hand branch of James River in Amherst County.

**Ramble**; post village in Halifax County.

**Ramsey**; gap in Great North Mountains in Rockbridge County.

**Ramsey Draft**; small left-hand tributary to James River in Augusta County.

**Ramsey Mountain**; summit in Augusta County.

**Ranch**; post village in Orange County.

**Randolph**; creek, a small right-hand tributary to James River in Buckingham County.

**Randolph**; post village in Charlotte County on the Southern Railway.

**Rangeley**; village in Henry County.

**Ransons**; post village in Buckingham County.

**Raphine**; post village in Rockbridge County on the Baltimore and Ohio Railroad.

**Rapidan**; post village in Culpeper County.

**Rapidan**; river, a right-hand branch of Rappahannock River, forming the boundary between Greene and Orange counties on one side, and Madison and Culpeper on the other.

**Rappahannock**; county, situated in the northern part of the State in the Piedmont region, the western boundary being the summit of the Blue Ridge. In the eastern part its surface is rolling, becoming broken in the west by short ridges, outlayers of the Blue Ridge and by the heavy spurs of that range. The elevation ranges from 300 up to 3,500 feet in the summits of the Blue Ridge. Area, 264 square miles. Population, 8,843—white, 6,121; negro, 2,722; foreign born, 6; county seat, Washington. The mean magnetic declination in 1900 was 4° 05'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°.

**Rappahannock**; river, which heads in the Blue Ridge in Fauquier County and flows southeast to Chesapeake Bay. It is navigable to Fredericksburg.

**Rappahannock Academy**; post village in Caroline County.

**Rapps Mill**; post village in Rockbridge County.

**Rasnake**; post village in Russell County.

**Bat Hole**; mountains in Botetourt County.

**Rattle**; creek, a small left-hand tributary to North Fork of Holston River in Washington County.

**Battlesnake**; branch, a small left-hand tributary to Roanoke River in Campbell County.

**Battlesnake**; mountains in Rappahannock County. Elevation, 1,500 feet.

**Raven**; post village in Tazewell County on the Norfolk and Western Railway.

**Ravens Nest**; post village in Washington County.

**Rawley Springs**; post village in Rockingham County.

**Ray**; post village in Pittsylvania County.

**Ray**; fork, a small tributary to Dry Fork, rising in Tazewell County.

**Raynor**; post village in Isle of Wight County.

**Reads Wharf**; post village in Northampton County.

**Readus**; village in Shenandoah County.

**Reams**; post village in Dinwiddie County on the Atlantic Coast Line Railroad.

**Beardon**; post village in Charlotte County.

**Reba**; post village in Bedford County.

**Rectortown**; post village in Fauquier County on the Southern Railway.

**Rectory**; post village in Stafford County.

**Redbank**; post village in Halifax County.

**Redbluff**; post village in Wythe County.

**Red Bud**; run, a small left-hand tributary to Shenandoah River in Frederick County.

**Redeye**; post village in Pittsylvania County.

**Redhill**; post village in Albemarle County on the Southern Railway. Altitude, 626 feet.

**Redhouse**; post village in Charlotte County.

**Reding**; post village in Goochland County.

**Rediviva**; post village in Rappahannock County.

**Red Mills**; post village in Rockbridge County.

**Redmonds**; village in Albemarle County.

**Redoak**; post village in Charlotte County.

**Redoak Knob**; small summit in Highland County.

**Red Oak Mountain**; summits in Fauquier County. Elevation, 750 to 1,000 feet.

**Red Rock**; summit in Washington County. Elevation, 4,456 feet.

**Redwood**; post village in Franklin County on the Southern Railway.

**Reed**; creek, a left-hand branch of New River in Wythe County.

**Reed**; creek, a small right-hand tributary to North Fork of Powell River in Lee County.

**Reed**; creek, a right-hand branch of New River rising in Wythe County.

**Reed**; creek, a small right-hand branch of James River in Bedford County.

**Reedcreek**; village in Henry County.

**Reed Island**; post village in Pulaski County on the Norfolk and Western Railway. Altitude, 1,886 feet.

**Reeds**; gap in the Blue Ridge in Nelson County.

**Reedville**; post village in Northumberland County.

**Reedy**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.

**Reedy**; creek, a small left-hand tributary to Roanoke River in Appomattox County.

**Reedy**; creek, a small right-hand branch of James River in Chesterfield County.

- Reedy**; post village in Lunenburg County.  
**Reese**; post village in Charlotte County.  
**Regent**; post village in Middlesex County.  
**Regulus**; village in Henry County.  
**Rehoboth**; post village in Lunenburg County.  
**Rehoboth Church**; post village in Lancaster County.  
**Rei**; post village in Washington County.  
**Reliance**; post village in Warren County.  
**Relief**; post village in Frederick County.  
**Remington**; town in Fauquier County on the Southern Railway. Population, 198.  
**Renan**; post village in Pittsylvania County.  
**Renie**; post village in Amherst County.  
**Renoville**; post village in Princess Anne County.  
**Repton**; post village in Nelson County.  
**Republican Grove**; post village in Halifax County.  
**Rescue**; post village in Isle of Wight County.  
**Residence**; post village in Halifax County.  
**Rest**; post village in Frederick County.  
**Return**; post village in Caroline County.  
**Retz**; post village in Mathews County.  
**Reusens**; post village in Campbell County on the Chesapeake and Ohio Railway.  
**Reva**; post village in Culpeper County.  
**Rex**; post village in Carroll County.  
**Rexburg**; post village in Essex County.  
**Reynolds**; creek, a small right-hand tributary to James River in Cumberland County.  
**Reynolds Store**; post village in Frederick County.  
**Rhoadesville**; post village in Orange County.  
**Ribbon**; post village in Louisa County.  
**Rice**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.  
**Rice Depot**; post village in Prince Edward County on the Norfolk and Western Railway.  
**Riceville**; post village in Pittsylvania County.  
**Rich**; creek, a small right-hand branch of New River in Giles County.  
**Rich**; mountains in Tazewell and Bland counties. Elevation, 2,500 to 3,000 feet.  
**Rich**; valley in Washington County.  
**Richards**; ford of Rappahannock River in Stafford County.  
**Richardson**; post village in Carroll County.  
**Richardson Mountain**; summit in Amherst County.  
**Richardsville**; post village in Culpeper County.  
**Rich Hill**; mountains in Giles County.  
**Rich Hill**; summits in Rockbridge County.  
**Rich Hill**; summit in Botetourt County.  
**Richland**; mountains in Rockingham County.  
**Richlands**; town in Tazewell County on the Norfolk and Western Railway. Altitude, 1,926 feet. Population, 475.  
**Richmond**; county, situated in the eastern part of the State on the Atlantic plain near the coast, and borders on Rappahannock River on the north. The surface is rolling; elevation, about 200 feet above tide. Area, 188 square miles. Population, 7,088—white, 4,159; negro, 2,929; foreign born, 28. County seat, Warsaw. The mean magnetic declination in 1900 was 4° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.

- Richmond**; county seat of Henrico County and capital of the State. It is on the Atlantic Coast Line, the Chesapeake and Ohio, the Richmond, Fredericksburg and Potomac, the Seaboard Air Line, and the Southern railroads. Independent in government. Population, 85,050.
- Rich Mountain**; summit in Carroll County. Elevation, 3,551.
- Rich Patch**; mountains in Alleghany and Botetourt counties. Elevation, 1,500 to 3,500 feet.
- Richpatch**; post village in Alleghany County.
- Rich Valley**; post village in Smyth County.
- Ridge**; run, a small left-hand tributary to York River in Orange County.
- Ridgemont**; post village in Bedford County.
- Ridgeway**; town in Henry County on the Norfolk and Western Railway. Altitude, 819 feet. Population, 332.
- Rifton**; post village in Floyd County.
- Riles**; run, a small left-hand tributary to Shenandoah River in Shenandoah County.
- Rileyville**; post village in Page County on the Norfolk and Western Railway. Altitude, 923 feet.
- Riner**; post village in Montgomery County.
- Ringgold**; post village in Pittsylvania County on the Southern Railway.
- Rinkerton**; post village in Shenandoah County.
- Rio**; post village in Albemarle County on the Southern Railway.
- Riovista**; post village in Henrico County on the Chesapeake and Ohio Railway.
- Ripley Mills**; post village in Craig County.
- Ripplemead**; post village in Giles County on the Norfolk and Western Railway. Altitude, 1,603 feet.
- Ripraps**; post village in Elizabeth City County.
- Ripshin**; creek, a small right-hand branch of New River in Gray County.
- Ritchieville**; post village in Dinwiddie County.
- Rival**; post village in Buckingham County.
- Rivanna**; post village in Albemarle County on the Chesapeake and Ohio Railway.
- Rivanna**; river, a small left-hand tributary to James River, formed by two forks, North and South, in Albemarle County.
- Riven**; rocks in Jack Mountain, Highland County.
- Riven Rock**; mountains in Rockingham County. Elevation, 2,500 feet.
- Riverdale**; post village in Southampton County.
- River Knobs**; summits in Scott County.
- River Knobs**; summits in Washington County.
- Rivermont**; post village in Franklin County.
- Riverside**; post village in Rockbridge County on the Norfolk and Western Railway. Altitude, 935 feet.
- Riversidepark**; post village in Fairfax County on the Washington, Alexandria and Mount Vernon Electric Railway.
- Riverton**; post village in Warren County on the Norfolk and Western and the Southern railways.
- Riverville**; post village in Amherst County.
- Rives**; post village in Prince George County.
- Rixeyville**; post village in Culpeper County.
- Roach**; river, a small left-hand tributary to James River in Greene County.
- Roadside**; post village in Rockingham County.
- Roague**; run, a small left-hand tributary to Shenandoah River in Augusta County.
- Roanes**; post village in Gloucester County.
- Roanoke**; river of Virginia and North Carolina, heading in the Valley of Virginia and largely in Roanoke County. It flows in a generally southeast course to its mouth in Albemarle Sound in North Carolina. From the mouth of its principal branch, Dan River, to the point near its source, it is commonly known as Staunton River. It is navigable to the fall line at Weldon, N. C. The mean discharge is 506 cubic feet per second; drainage area, 9,237 square miles.

**Roanoke;** county, situated in the western part of the State on the summit of the Blue Ridge, there having the form of a broad plateau with an escarpment facing the east. Its surface is broken with many parallel ridges, turning northeast and southwest, and limestone valleys. It is drained by Roanoke River. The altitude ranges from 900 up to 3,500 feet above sea level. Area, 297 square miles. Population, 15,837—white, 11,991; negro, 3,845; foreign born, 48. County seat, Salem. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western Railway.

**Roanoke;** city in Roanoke County, independent in government, on the Norfolk and Western Railway. Population, 21,495. Altitude, 907 feet.

**Roaring;** fork, a small right-hand tributary to Powell River in Wise County.

**Roaring;** fork, a small tributary to North Fork of Holston River in Tazewell County.

**Roaring;** run, a small left-hand branch of James River in Botetourt County.

**Roaring;** run, a small right-hand tributary to James River in Botetourt County.

**Roaring Falls;** mountains in Wythe County.

**Roaring Run;** village in Botetourt County.

**Bob;** post village in Botetourt County.

**Roberta;** post village in Franklin County.

**Roberts;** creek, a small left-hand branch of North Fork of Holston River, rising in Scott County.

**Roberts;** mountains in Nelson County.

**Robertson;** river, a small right-hand tributary to Rappahannock River in Madison County.

**Robertson;** run, a small right-hand tributary to Mattaponi River in Spottsylvania County.

**Robertsons;** post village in Bedford County.

**Robinett;** post village in Scott County.

**Robinson;** gap in Blue Ridge in Rockbridge County.

**Robinson;** river, a small right-hand tributary to Rappahannock River in Madison County.

**Robinsons;** branch, a small left-hand tributary to James River in Rockbridge County.

**Robious;** post village in Chesterfield County on the Southern Railway.

**Rochelle;** post village in Madison County.

**Rock;** creek, a small right-hand tributary to New River in Carroll County.

**Rock;** creek, a small right-hand tributary to James River in Cumberland County.

**Rock;** island in James River in Buckingham County.

**Rockbridge;** county, situated in the western part of the State in the Appalachian Valley, the eastern boundary being the summit of the Blue Ridge. The surface in the eastern part is broken by many short ridges and isolated summits. It is drained by South River and a branch of the James. The altitude ranges from 800 up to 3,500 feet. Area, 593 square miles. Population, 21,799—white, 17,715; negro, 4,084; foreign born, 57. County seat, Lexington. The mean magnetic declination in 1900 was  $1^{\circ} 40'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Chesapeake and Ohio, the Baltimore and Ohio, and the Norfolk and Western railroads.

**Rockbridge Alum Springs;** post village in Rockbridge County on the Rockbridge Alum Springs and Virginia and Western Railroad.

**Rockbridge Baths;** post village in Rockbridge County.

**Rockcastle;** creek, a small left-hand tributary to Roanoke River in Bedford County.

**Rockcastle;** post village in Goochland County on the Chesapeake and Ohio Railway.

**Rockdale;** creek, a small right-hand branch of James River in Chesterfield County.

**Rockdell;** post village in Russell County.

- Rock Enon Springs**; post village in Frederick County.
- Rock Fish**; gap in the Blue Ridge in Augusta County on the Southern Railway.
- Rockfish**; river, a left-hand branch of James River in Nelson County.
- Rockfish**; run, a small left-hand branch of James River in Fluvanna County.
- Rockfish Depot**; post village in Nelson County.
- Rockford**; post village in Stafford County.
- Rockhouse**; post village in Russell County.
- Rockingham**; county, situated in the northwestern part of the State in the Appalachian Valley, its eastern boundary being through most of its course the summit of the Blue Ridge. The surface is rolling, with the exception of the slopes of the Blue Ridge and Massanutten Mountain. The altitude ranges from a little less than a few thousand feet up to 3,500 feet in the Blue Ridge summits. Area, 870 square miles. Population, 33,527—white, 30,893; negro, 2,632; foreign born, 100. County seat, Harrisonburg. The mean magnetic declination in 1900 was 2° 45'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Baltimore and Ohio, the Chesapeake Western, the Southern, and the Norfolk and Western railroads.
- Rockingham**; post village in Rockingham County.
- Rock Island**; post village in Buckingham County.
- Rock Island**; run, a small right-hand branch of James River in Buckingham County.
- Rock Lick**; branch, a small right-hand branch of Levisa Fork in Buchanan County.
- Rock Lick**; creek, a small right-hand branch of Levisa Fork, rising in Buchanan County.
- Rock**; summit in Nelson County. Elevation, 3,210 feet.
- Rock Spring**; small right-hand branch of New River in Pulaski County.
- Rockville**; post village in Hanover County.
- Rocky**; branch, a small left-hand tributary to James River in Bath County.
- Rocky**; branch, a small right-hand tributary to Chickahominy River in Henrico County.
- Rocky**; ford in Goose Creek in Bedford County.
- Rocky**; fork, a small left-hand tributary to Guest River in Wise County.
- Rocky**; gap between Rich and Wolf Creek mountains, caused by a left-hand branch of Wolf Creek.
- Rocky**; river, a small left-hand tributary to James River in Albemarle County.
- Rocky**; run, a small left-hand branch of James River in Botetourt County.
- Rocky**; run, a small left-hand tributary to Appomattox River in Appomattox County.
- Rocky**; run, a small left-hand tributary to Shenandoah River in Rockingham County.
- Rockygap**; post village in Bland County.
- Rocky Hollow**; small left-hand branch of Cripple Creek in Wythe County.
- Rocky Mount**; county seat of Franklin County on the Norfolk and Western and the Southern railways. Population, 612. Altitude, 1,132 feet.
- Rocky Mount**; turnpike in Bedford County.
- Rocky Mountain**; summit in Rockbridge County. Elevation, 4,010 feet.
- Rockypoint**; post village in Botetourt County on the Chesapeake and Ohio Railway.
- Rocky Ridge**; summit in Black Creek Mountains in Bath County.
- Rocky Row**; mountains in Amherst County. Elevation, 1,500 to 2,000 feet.
- Rocky Row**; run, a small left-hand branch of James River in Amherst County.
- Rockyrun**; post village in Orange County.
- Rodden**; post village in Halifax County.
- Rodes**; post village in Bedford County.
- Rodophil**; post village in Amelia County.
- Rogers**; mountain between Grayson and Smyth counties.

- Rogers**; post village in Montgomery County.  
**Rolla**; post village in Augusta County.  
**Rolling Hill**; post village in Charlotte County.  
**Rollins Fork**; post village in King George County.  
**Roma**; post village in Bedford County.  
**Roman**; post village in Augusta County.  
**Rondabush**; post village in Greene County.  
**Rondo**; post village in Pittsylvania County.  
**Roop**; village in Montgomery County.  
**Rorer Mines**; village in Roanoke County on the Norfolk and Western Railway.  
**Rorrer**; post village in Carroll County.  
**Rosa**; post village in Halifax County.  
**Rose**; run, a small left-hand branch of South Fork of Roanoke River in Montgomery County.  
**Rose Bower**; post village in Appomattox County.  
**Rosebrook**; post village in Greene County.  
**Rosedale**; post village in Russell County.  
**Rosehill**; post village in Lee County on the Louisville and Nashville Railroad.  
**Roseland**; post village in Nelson County.  
**Rose Mills**; post village in Nelson County.  
**Rosena**; post village in Albemarle County.  
**Rosenbaum**; creek, a small left-hand branch of South Fork of Holston River in Washington County.  
**Rosenberger**; post village in Frederick County.  
**Roseville**; post village in Stafford County.  
**Rosewood**; post village in Pittsylvania County.  
**Rosier**; creek, a small right-hand branch of Potomac River in King George County.  
**Rosita**; post village in King George County.  
**Rosslyn**; post village in Alexandria County on the Philadelphia, Baltimore and Washington and the Washington, Alexandria and Mount Vernon railroads.  
**Rough**; creek, a small left-hand tributary to Roanoke River in Charlotte County.  
**Rough**; creek, a small branch of Appomattox River in Appomattox County.  
**Rough**; mountains in Bath County. Elevation, 1,500 to 2,500 feet.  
**Rough**; post village in Bedford County.  
**Roughcreek**; post village in Charlotte County.  
**Round**; mountain in Bland County. Elevation, 2,500 to 3,500 feet.  
**Round Hill**; summit in Augusta County.  
**Round Hill**; summit in Frederick County.  
**Round Hill**; summit in Roanoke County.  
**Round Hill**; summit in Rockingham County. Elevation, 1,500 feet.  
**Round Hill**; town in Loudoun County on the Southern Railway. Altitude, 558 feet.  
**Round Mountain**; summit in Amherst County. Elevation, 1,000 feet.  
**Round Mountain**; summit in Botetourt County.  
**Round Top**; summit of the Blue Ridge in Nelson and Amherst counties. Elevation, 3,430 feet.  
**Rouss**; post village in Scott County.  
**Routts**; post village in Fauquier County.  
**Bowanta**; post village in Dinwiddie County.  
**Bowanty**; creek, a left-hand branch of Nottoway River in southeast Virginia.  
**Boxbury**; post village in Charles City County on the Chesapeake and Ohio Railway.  
**Boxie**; post village in Smyth County.  
**Boxton**; post village in Lunenburg County.  
**Boyville**; post village in Loudoun County.  
**Buark**; post village in Middlesex County.



- Rubermont**; post village in Lunenburg County.
- Rucker**; run, a small left-hand tributary to James River in Nelson County.
- Ruckers**; creek, a small left-hand tributary to James River in Amherst County.
- Ruckers**; gap in Bath County.
- Ruckersville**; post village in Greene County.
- Ruckles**; gap in Massanutten Mount.
- Ruddle Mountain**; summit on border of Roanoke and Bedford counties.
- Rudder**; post village in Sussex County.
- Rudy**; inlet, a narrow passage through the bordering sand bar on the southeast coast.
- Rue**; post village in Accomac County.
- Ruel**; post village in Hanover County.
- Ruffins**; post village in Surry County.
- Rugby**; post village in Grayson County.
- Rumford**; post village in King William County.
- Ruralbower**; post village in Greensville County.
- Rural Home**; post village in Grayson County.
- Rural Retreat**; post village in Wythe County on the Norfolk and Western Railway. Altitude, 2,500 feet.
- Rush**; creek, a small left-hand branch of South Fork of Holston River in Washington County.
- Rush**; river, a small right-hand tributary to Rappahannock River in Rappahannock County.
- Rushville**; post village in Rockingham County.
- Ruskin**; post village in Tazewell County.
- Russell**; county, situated in the southwestern part of the State, mainly in the Appalachian Valley. It is drained by the Clinch River on the north. The county extends to the summit of the Alleghany front. It has an altitude of 3,700 feet, while that of Clinch River at the lowest point is about 1,400 feet above sea level. Area, 563 square miles. Population, 18,031—white, 17,267; negro, 764; foreign born, 8. County seat, Lebanon. The mean magnetic declination in 1900 was  $1^{\circ} 15'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western Railway.
- Russell**; creek, a small right-hand branch of Clinch River, rising in Dickenson County.
- Russell**; post village in Floyd County.
- Russell Prator**; small right-hand branch of Russell Fork, rising in Buchanan County.
- Russell Rock**; summit in Augusta County.
- Russian**; creek, a small left-hand fork of Clinch River, rising in Russell County.
- Rustburg**; county seat of Campbell County on the Norfolk and Western Railway. Altitude, 872 feet.
- Ruth**; post village in Madison County.
- Rutherford**; creek, a small left-hand branch of Cripple Creek in Wythe County.
- Rutherglen**; post village in Caroline County on the Richmond, Fredericksburg and Potomac Railroad.
- Ruthville**; post village in Charles City County.
- Rutledges**; creek, a small left-hand tributary to James River in Amherst County.
- Rutman**; branch, a small left-hand tributary to Roanoke River in Botetourt County.
- Rux**; post village in Brunswick County.
- Ryan**; post village in Loudoun County.
- Ryecove**; post village in Scott County.
- Rye Valley**; post village in Smyth County.
- Ryland**; post village in Culpeper County.

- Sabot Island**; post village in Goochland County.
- Saddle**; creek, a small right-hand branch of New River in Grayson County.
- Saddle**; post village in Grayson County.
- Saffolds**; post village in Mecklenburg County.
- Sago**; post village in Pittsylvania County.
- St. Brides**; post village in Norfolk County on the Norfolk and Western Railway.
- St. Clair**; creek, a small left-hand branch of South Fork of Holston River in Smyth County.
- St. Clair Bottom**; village in Smyth County on the Norfolk and Western Railway. Altitude, 2,444 feet.
- St. Davids Church**; post village in Shenandoah County.
- St. Elmo**; post village in Alexandria County on the Washington, Alexandria and Mount Vernon Electric Railway.
- St. Just**; post village in Orange County.
- St. Luke**; post village in Shenandoah County.
- St. Mary**; river, a small left-hand tributary to James River in Augusta County.
- St. Paul**; post village in Wise County on the Norfolk and Western Railway. Altitude, 1,486 feet.
- St. Stephens Church**; post village in King and Queen County.
- Salem**; county seat of Roanoke County on the Norfolk and Western and the Southern railways. Altitude, 1,006 feet. Population, 3,412.
- Salisbury Furnace**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 894 feet.
- Sallee**; creek, a small right-hand tributary to James River in Powhatan County.
- Sallings Mountain**; summits in Rockbridge County.
- Salt**; creek, a small left-hand tributary to James River in Amherst County.
- Salt**; pond in the eastern part of Princess Anne County.
- Saltcreek**; post village in Amherst County.
- Saltpetre Cave**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 892 feet.
- Salt Pond**; mountains in Giles County. Elevation, 3,000 to 4,000 feet.
- Saltville**; town in Smyth County on the Norfolk and Western Railway. Altitude, 1,739 feet. Population, 1,051.
- Saluda**; county seat of Middlesex County.
- Sambo**; post village in Patrick County.
- Samos**; post village in Middlesex County.
- Sampson**; post village in Augusta County on the Norfolk and Western Railway.
- Sampsons Wharf**; post village in Northumberland County.
- Sanco**; post village in Prince Edward County.
- Sand**; mountains in Wythe County. Elevation, 2,500 feet.
- Sand Bank**; mountains in Botetourt County. Elevation, 2,500 feet.
- Sand Bridge**; locality in Princess Anne County.
- Sandidges**; post village in Amherst County.
- Sandoval**; post village in Culpeper County.
- Sands**; post village in Southampton County.
- Sandstone Ridge**; mountains in Roanoke County.
- Sandy**; point on Belmont Bay in Fairfax County.
- Sandy**; post village in Rappahannock County.
- Sandy**; river, a left-hand branch of Dan River in Pittsylvania County.
- Sandy**; river, a small right-hand tributary to Appomattox River in Prince Edward County.
- Sandy**; run, a small right-hand tributary to Potomac River in Prince William County.
- Sandy Bottom**; post village in Middlesex County.

- Sandyford**; post village in Bedford County.  
**Sandyhook**; post village in Goochland County.  
**Sandy Level**; post village in Pittsylvania County.  
**Sandy Ridge**; mountains extending along the boundary line of Russell, Tazewell, and Buchanan counties.  
**Sandy Ridge**; mountains in Wise and Dickenson counties. Elevation, 2,000 to 2,500 feet.  
**Sandy River**; post village in Pittsylvania County.  
**Sanford**; post village in Accomac County.  
**Sang Camp**; fork, a small right-hand tributary to Levisa Fork in Buchanan County.  
**Sangerville**; post village in Augusta County.  
**Santamo**; post village in Buchanan County.  
**Santiago**; post village in Page County.  
**Santos**; post village in Floyd County.  
**Sanville**; post village in Henry County.  
**Sappony**; branch, a small left-hand branch of Appomattox River in Chesterfield County.  
**Saratoga**; post village in Scott County.  
**Sassafras**; post village in Gloucester County.  
**Sassin**; post village in Pulaski County.  
**Saumsville**; post village in Shenandoah County.  
**Saunders**; post village in Nansemond County on the Suffolk and Carolina Railway.  
**Savage Crossing**; post village in Nansemond County.  
**Savageville**; post village in Accomac County.  
**Savannah**; post village in Alleghany County.  
**Savage**; post village in Surry County on the Southern Railway.  
**Saw Mill**; run, a small left-hand tributary to Shenandoah River in Augusta County.  
**Saw Mill Ridge**; summit in Augusta County.  
**Saxe**; post village in Charlotte County on the Southern Railway.  
**Saxis**; post village in Accomac County.  
**Sayersville**; post village in Tazewell County.  
**Saylers**; creek, a small right-hand branch of Appomattox River in Prince Edward County.  
**Scaffold**; run, a small right-hand tributary to Jackson River in Highland County.  
**Scheffer**; gap in Little North Mountain in Shenandoah County.  
**School**; post village in Henrico County.  
**Schoolhouse**; branch, a small right-hand tributary to James River in Botetourt County.  
**Schuyler**; post village in Nelson County.  
**Scotland**; post village in Surry County on the Surry, Sussex and Southampton Railway.  
**Scott**; county, situated in the southwestern part of the State. Its area consists of an alternation of narrow ridges and valleys, trending northeast and southwest. It is drained by the Clinch and the North Fork of Holston River. The altitude ranges from 1,200 to 4,000 feet. Area, 535 square miles. Population, 22,694—white, 22,067; negro, 627; foreign born, 9. County seat, Gate City. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Virginia and Southwestern Railway.  
**Scott**; creek, a small left-hand branch of Elizabeth River in Norfolk County.  
**Scotts**; ford of Middle River in Rockingham County.  
**Scotts**; run, a small right-hand branch of Potomac River in Fairfax County.  
**Scottsburg**; post village in Halifax County on the Southern Railway.  
**Scotts Crossroads**; post village in Mecklenburg County.  
**Scottsford**; village in Rockingham County.  
**Scotts Mountain**; summit in Amherst County.

**Scottsville;** town in Albemarle County on the Chesapeake and Ohio Railway. Altitude, 275 feet. Population, 1,248.

**Scrabble;** post village in Rappahannock County.

**Screamerville;** post village in Spottsylvania County on the Potomac, Fredericksburg and Piedmont Railroad.

**Scruggs;** post village in Franklin County.

**Scurff Mountain;** summit in Botetourt County.

**Sealston;** post village in King George County.

**Seaview;** post village in Northampton County.

**Sebrell;** post village in Southampton County.

**Second;** small left-hand branch of Appomattox River in Chesterfield County.

**Second;** mountain in Rockingham County. Elevation, 2,000 to 2,500 feet.

**Second Swamp;** small right-hand tributary to James River in Prince George County.

**Sedalia;** post village in Bedford County.

**Seddon;** town in Bland County. Population, 243.

**Seibert;** run, a small right-hand tributary to Jackson River in Highland County.

**Selden;** post village in Gloucester County on the Chesapeake and Ohio Railway.

**Self;** village in Henry County.

**Sells;** village in Grayson County.

**Selma;** post village in Alleghany County.

**Selone;** post village in Fauquier County.

**Seneca;** river, a small left-hand branch of Roanoke River in Campbell County.

**Sentinel;** post village in Warren County.

**Seven Fountains;** post village in Shenandoah County.

**Seven Islands;** post village in Fluvanna County.

**Seven Mile;** ford of Middle Fork of Holston River in Smyth County.

**Seven Mile;** mountains in Craig County. Elevation, 2,000 to 2,500 feet.

**Sevenmile Ford;** post village in Smyth County.

**Severn;** post village in Gloucester County.

**Seville;** post village in Madison County.

**Sewall;** point of land, in Princess Anne County, extending into James River.

**Sewells Point;** post village in Norfolk County.

**Sewish;** creek, a small left-hand tributary to Meherrin River in Lunenburg County.

**Sexton;** post village in Surry County.

**Shacklefords;** post village in King and Queen County.

**Shacklet;** post village in Stafford County.

**Shack Mills;** post village in Buchanan County.

**Shadwell;** post village in Albemarle County on the Chesapeake and Ohio Railway.

**Shadygrove;** post village in Franklin County.

**Shadyside;** post village in Northampton County.

**Shafer;** creek, a right-hand branch of Powell River in Lee County.

**Shafer;** ford of Powell River in Lee County.

**Shafter;** post village in Albemarle County.

**Shako;** post village in Goochland County.

**Shallow;** ford of Roanoke River in Franklin County.

**Shamrock;** post village in Grayson County.

**Shanghai;** post village in King and Queen County.

**Shanklin;** post village in Bath County.

**Shannon Hill;** post village in Goochland County.

**Shanty Hollow;** small left-hand tributary to James River in Alleghany County.

**Sharps;** branch, a small right-hand tributary to Holston River, rising in Scott County.

**Sharps;** creek, a small right-hand tributary to James River in Buckingham County.

**Sharps;** post village in Richmond County.

**Shaws;** fork, a small left-hand tributary to James River in Highland County.

- Shaws Ridge**; mountains in Highland County, extending into Pendleton County, W. Va. Elevation, 2,500 feet.
- Shaws Store**; post village in Mecklenburg County.
- Shawsville**; post village in Montgomery County on the Norfolk and Western Railway. Altitude, 1,473 feet.
- Shawver Mill**; post village in Tazewell County.
- Sheep**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Sheep**; run, a small left-hand tributary to James River in Rockbridge County.
- Sheetz**; mountain in Boutetourt County.
- Sheldries**; creek, a small right-hand branch of James River in Buckingham County.
- Shelfar**; post village in Louisa County.
- Shell**; marshy point, in Princess Anne County, projecting into Back Bay.
- Shell**; post village in Mathews County.
- Shellville**; village in Montgomery County.
- Shelton**; post village in Nelson County.
- Shenandoah**; county, situated in the northwestern part of the State in the Appalachian Valley, there known as the Valley of the Shenandoah, extending from the Massanutten Mountain on the east to North Mountain, the State line, on the west. The surface is in the main undulating, diversified by a few parallel ridges. The altitude ranges from 600 feet up to 3,000 feet. Area, 486 square miles. Population, 20,253—white, 19,604; negro, 649; foreign born, 58. County seat, Woodstock. The mean magnetic declination in 1900 was 3° 50'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Southern and the Baltimore and Ohio railroads.
- Shenandoah**; mountains in Highland and Bath counties. Elevation, 2,000 to 3,500 feet.
- Shenandoah**; river of Virginia and West Virginia; a right-hand branch of the Potomac, which heads in two large branches, North and South forks, in Augusta and Rockingham counties, and flows northeast to its junction with the Potomac at Harpers Ferry. The drainage area is 3,009 square miles.
- Shenandoah**; town in Page County on the Norfolk and Western Railway. Population, 1,220.
- Shenandoah Alum Springs**; post village in Shenandoah County.
- Shendun**; town in Rockingham County. Population, 381.
- Sheppards**; post village in Buckingham County on the Southern Railway.
- Sherando**; post village in Augusta County.
- Sherwill**; village in Campbell County.
- Sherwood**; post village in Rockbridge County on the Chesapeake and Ohio Railway.
- Sheva**; post village in Pittsylvania County.
- Shields**; gap in Nelson County.
- Shiloh**; post village in King George County.
- Shirkey Mill**; branch, a small right-hand tributary to James River in Botetourt County.
- Shirley**; post village in Charles City County.
- Shockes**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Shockeyesville**; post village in Frederick County.
- Shockoe**; creek, a small left-hand tributary to James River in Henrico County.
- Shockoe**; post village in Pittsylvania County.
- Shooting Creek**; post village in Franklin County.
- Shores**; post village in Fluvanna County on the Chesapeake and Ohio Railway.
- Short**; mountain in Tazewell County. Elevation, 1,300 to 4,000 feet.
- Short**; mountains in Bath County.
- Short**; mountains in Shenandoah County. Elevation, 1,000 to 2,500 feet.
- Short Hill**; mountains in Loudoun County. Elevation, 1,000 feet.
- Short Hills**; mountains in Rockbridge County. Elevation, 2,000 to 2,565 feet.

- Shorts Creek**; post village in Carroll County.  
**Shortsville**; post village in Washington County.  
**Shoulder**; run, a small left-hand tributary to Roanoke River in Bedford County.  
**Shoulders Hill**; post village in Nansemond County on the Southern Railway.  
**Shout**; creek, a small left-hand branch of North Fork of Holston River in Washington County.  
**Showalter**; post village in Floyd County on the Baltimore and Ohio Railroad.  
**Shraders**; post village in Tazewell County.  
**Shrouds**; creek, a small right-hand branch of New River, rising in Pulaski County.  
**Shuff**; post village in Patrick County.  
**Shuler**; post village in Page County.  
**Shumansville**; post village in Caroline County.  
**Siddons**; post village in Mecklenburg County.  
**Sideburn**; post village in Fairfax County on the Southern Railway.  
**Sideling Hill**; mountains in Bath, Rockbridge, and Augusta counties. Elevation, 2,000 to 2,500 feet.  
**Sideway**; post village in Rockbridge County.  
**Sidna**; post village in Carroll County.  
**Sigma**; post village in Princess Anne County.  
**Signpine**; post village in Gloucester County.  
**Silcott Springs**; post village in Loudoun County.  
**Silentdell**; post village Botetourt County.  
**Siler**; post village in Frederick County.  
**Silva**; post village in Accomac County.  
**Silverton**; post village in Southampton County.  
**Simeon**; post village in Albemarle County.  
**Simmonds**; gap in Franklin County.  
**Simmons**; gap in the Blue Ridge in Rockingham County.  
**Simmonsville**; post village in Craig County.  
**Simonson**; post village in Richmond County.  
**Simpson**; creek, a small left-hand tributary to James River in Alleghany County.  
**Simpsons**; post village in Floyd County on the Norfolk and Western Railway. Altitude, 665 feet.  
**Sims**; post village in Goochland County.  
**Sinai**; post village in Halifax County.  
**Singer**; post village in Roanoke County on the Norfolk and Western Railway.  
**Singerglen**; town in Rockingham County. Population, 108.  
**Singville**; post village in Amelia County.  
**Sinking**; creek, a small creek in Scott and Russell counties.  
**Sinking**; creek, a right-hand branch of New River in Craig and Giles counties.  
**Sinking**; creek, a small left-hand tributary to James River in Bath and Botetourt counties.  
**Sinking Creek**; post village in Craig County.  
**Sinnickson**; post village in Accomac County.  
**Sister Knob**; summit in Bath County.  
**Sitlington**; post village in Bath County.  
**Skeetrock**; post village in Dickenson County.  
**Skidmore**; fork, a small left-hand tributary to Shenandoah River in Augusta County.  
**Skidmore**; run, a small left-hand tributary to Shenandoah River in Rockingham County.  
**Skinker**; neck of land in Caroline County bounded by Rappahannock River.  
**Skinells**; creek, a small left-hand tributary to Roanoke River in Bedford County.  
**Skinquarter**; creek, a small left-hand branch of Appomattox River on the border line between Powhatan and Chesterfield counties.

**Skinquarter**; post village in Chesterfield County on the Farmville and Powhatan Railroad.

**Skippers**; post village in Greenville County.

**Skipwith**; post village in Mecklenburg County on the Southern Railway.

**Sky**; village in Rockingham County.

**Skyland**; post village in Page County.

**Skyron**; post village in King William County.

**Slate**; creek, a right-hand branch of Levisa Fork, rising in Buchanan County.

**Slate**; post village in Floyd County.

**Slate**; river, a small right-hand branch of James River in Buckingham County.

**Slate**; run, a small right-hand tributary to Potomac River in Prince William County.

**Slate**; springs in Rockingham County.

**Slate Mills**; post village in Rappahannock County.

**Slate River Mills**; post village in Buckingham County.

**Slatesville**; village in Pittsylvania County.

**Slaughter**; post village in Nelson County.

**Sleepy**; creek, a small right-hand tributary to Potomac River, formed by two forks, North and South, in Frederick County.

**Slemp**; creek, a small right-hand branch of South Fork of Holston River in Smyth County.

**Slemp**; post village in Lee County.

**Slings**; gap in the Blue Ridge in Franklin County.

**Slings**; gap in the Blue Ridge in Roanoke County.

**Slusser**; post village in Montgomery County.

**Smacks**; creek, a small right-hand branch of Appomattox River in Amelia County.

**Smart**; post village in Floyd County.

**Smilax**; post village in Mecklenburg County.

**Smith**; creek, a small left-hand tributary to James River in Alleghany and Augusta counties.

**Smith**; creek, a small left-hand tributary to North Fork of Holston River, rising in Washington County.

**Smith**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Smith**; ford of Blackwater River in Franklin County.

**Smith**; mountains in Pittsylvania County. Elevation, 1,500 to 2,043 feet.

**Smith**; post village in Floyd County on the Chesapeake and Ohio Railway.

**Smith**; river, a large left-hand branch of Dan River in Patrick and Henry counties.

**Smithcreek**; post village in Washington County.

**Smithfield**; town in Isle of Wight County. Population, 1,225.

**Smithland**; post village in Albemarle County.

**Smith Ridge**; mountains in Roanoke County. Elevation, 1,500 feet.

**Smith Ridge**; summit in Roanoke County.

**Smiths Crossroads**; post village in Mecklenburg County.

**Smithville**; town in Charlotte County. Population, 96. Altitude, 1,150 feet.

**Smoky Ordinary**; post village in Brunswick County.

**Smoots**; post village in Caroline County.

**Smyrna**; post village in Bedford County.

**Smyth**; county, situated in the southwestern part of the State in the Appalachian Valley, and includes much of the headwaters of Holston River. Its surface is an alternation of narrow ridges and limestone valleys. The altitude ranges from 1,700 up to 4,000 feet. Area, 444 square miles. Population, 17,121—white, 15,950; negro, 1,170; foreign born, 60. County seat, Marion. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the temperature 50 to 55°. The county is traversed by the Norfolk and Western Railway.

- Smythers**; post village in Carroll County.
- Snail Creek**; river, a small tributary to Nottoway River in Lunenburg County.
- Snake**; creek, a small right-hand tributary to New River in Carroll County.
- Snake**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Snakecreek**; post village in Carroll County.
- Snake Hollow**; summit in Rockingham County.
- Snake Run Ridge**; mountains in Alleghany County. Elevation, 3,000 feet.
- Snapp**; post village in Tazewell County.
- Snead**; post village in Franklin County.
- Sneads Spring**; small left-hand tributary to Nottoway River in Nottoway County.
- Snell**; post village in Spottsylvania County.
- Snelson**; post village in Hanover County.
- Snickers**; gap in the Blue Ridge, Loudoun County.
- Snidows**; ferry over New River in Giles County.
- Snow**; creek, a small right-hand branch of James River in Bedford County.
- Snowcreek**; post village in Franklin County.
- Snowden**; post village in Amherst County.
- Snowflake**; post village in Scott County.
- Snowville**; post village in Pulaski County.
- Snyder**; post village in Augusta County.
- Soapstone**; post village in Pittsylvania County.
- Soap Stone**; quarry in Albemarle County.
- Soles**; post village in Mathews County.
- Solomons**; creek, a small right-hand branch of James River in Powhatan County.
- Solomons**; village in Henrico County.
- Somerset**; post village in Orange County on the Southern Railway.
- Somerton**; post village in Nansemond County.
- Somerville**; post village in Fauquier County.
- Sontag**; post village in Franklin County.
- Soudan**; post village in Mecklenburg County on the Southern Railway.
- Sounding Knob**; summit in Jack Mountains in Highland County.
- South**; small right-hand branch of Potomac River in Highland County.
- South**; mountains in Rockbridge County. Elevation, 1,500 to 2,500 feet.
- South**; river, a left-hand tributary to James River in Rockbridge County.
- South**; river, a right-hand branch of Shenandoah River in Augusta County. The mean discharge at Port Republic is 331½ cubic feet per second.
- South**; river, a small right-hand branch of Mattaponi River in Caroline County.
- South**; run, a small right-hand tributary to Potomac River in Prince William and Fauquier counties.
- South**; run, a small right-hand branch of Potomac River in Fairfax County.
- Southampton**; county, situated in the southern part of the State on the Atlantic plain, bordering the North Carolina line. Its surface is level and but 100 or 200 feet above tide. Area, 609 square miles. Population, 22,848—white, 9,165; negro, 13,683; foreign born, 22. County seat, Courtland. The mean magnetic declination in 1900 was 3° 30'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Southern and the Seaboard and Roanoke railways.
- South Anna**; river, a right-hand tributary to York River in Louisa County.
- South Boston**; town in Halifax County on the Norfolk and Western and the Southern railways. Population, 1,851.
- South Hill**; post village in Mecklenburg County on the Southern Railway.
- South Norfolk**; post village in Norfolk County.
- South Quay**; post village in Nansemond County.
- South Western**; mountains in Albemarle County. Elevation, 500 to 1,500 feet.



- Sowego**; post village in Fauquier County.  
**Sowers**; post village in Floyd County.  
**Space**; post village in Bedford County.  
**Spainville**; post village in Nottoway County.  
**Spanish Oaks**; village in Appomattox County.  
**Sparkling Springs**; post village in Rockingham County.  
**Sparta**; post village in Caroline County.  
**Spear**; mountains in Buckingham County. Elevation, 1,000 to 1,500 feet.  
**Spear Mount**; summit in Spear Mountain. Elevation, 1,500 feet.  
**Speedwell**; post village in Wythe County.  
**Speer**; ferry over Clinch River, at Speer Ferry town, in Scott County.  
**Speers Ferry**; post village in Scott County.  
**Spencer**; post village in Henry County on the Danville and Western Railway. Altitude, 855 feet.  
**Sperryville**; post village in Rappahannock County.  
**Spitler**; post village in Augusta County on the Norfolk and Western Railroad.  
**Sponge**; post village in Scott County.  
**Sport**; post village in Augusta County.  
**Spotcash**; post village in Brunswick County.  
**Spottsville**; post village in Surry County.  
**Spottswood**; post village in Augusta County on the Baltimore and Ohio Railroad.  
**Spottsylvania**; county situated in the central part of the State, mainly in the Piedmont region. It has a rolling surface. The elevation is only 200 or 300 feet above sea level. Area, 401 square miles. Population, 9,239—white, 5,353; negro, 3,886; foreign born, 65. County seat, Spottsylvania. The mean magnetic declination in 1900 was 3° 45'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Richmond, Fredericksburg and Potomac and the Southern railroads.  
**Spottsylvania**; county seat of Spottsylvania County.  
**Spout**; run, a small left-hand branch of Shenandoah River in Clarke County.  
**Spout**; run, a small right-hand branch of Potomac River in Alexandria County.  
**Spoutsprings**; post village in Appomattox County on the Norfolk and Western Railway. Altitude, 827 feet.  
**Spratts**; post village in Smyth County.  
**Spring**; branch, a small left-hand tributary to James River in Bath County.  
**Spring**; creek, a small left-hand tributary to James River in Alleghany County.  
**Spring**; creek, a small left-hand branch of Meherrin River in Lunenburg County.  
**Spring**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.  
**Spring**; creek, a small right-hand branch of South Fork of Holston River, rising in Washington County.  
**Springcreek**; post village in Rockingham County on the Chesapeake Western Railway.  
**Spring Garden**; post village in Pittsylvania County.  
**Springgrove**; post village in Surry County.  
**Springman**; post village in Fairfax County.  
**Spring Mills**; post village in Appomattox County.  
**Springvale**; post village in Fairfax County.  
**Springvalley**; post village in Grayson County.  
**Springville**; post village in Tazewell County.  
**Springwood**; post village in Botetourt County on the Chesapeake and Ohio Railway.  
**Sprouts**; run, a small right-hand branch of James River in Botetourt County.  
**Spruce**; run, a small right-hand branch of New River in Giles County.

**Spruce Pine;** branch, a small right-hand tributary to Levisa Fork in Buchanan County.

**Spruce Run;** mountains in Giles County. Elevation, 2,000 to 3,000 feet.

**Spur;** branch, a small right-hand tributary to Walker Creek in Wythe County.

**Spurgeon;** post village in Louisa County.

**Spy;** run, a small left-hand tributary to James River in Augusta County.

**Spy Rock;** summit in Nelson County. Altitude, 3,797 feet.

**Squire;** small left-hand branch of Slate Creek in Buchanan County.

**Stafford;** county, situated in the eastern part of the State in the Piedmont region.

It has an undulating surface, rising in the western edge and summit of the Blue Ridge, which forms the boundary. Most of the area of the county lies between 200 and 500 feet in altitude, and covers 285 square miles. Population, 8,097—white, 6,489; negro, 1,608; foreign born, 33. County seat, **Stafford**. The mean magnetic declination in 1900 was 3° 50'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Richmond, Fredericksburg and Potomac Railroad.

**Stafford;** county seat of Stafford County.

**Stafford Store;** post village in Stafford County.

**Staffordsville;** post village in Giles County.

**Stage Junction;** post village in Fluvanna County.

**Staley;** creek, a small left-hand branch of Middle Fork of Holston River in Smyth County.

**Standardsville;** county seat of Greene County.

**Standifords;** creek, a small right-hand tributary to Roanoke River in Franklin County.

**Stanley;** post village in Henry County on the Norfolk and Western Railway.

**Stanleyton;** post village in Page County. Altitude, 1,064 feet.

**Stanopher;** village in Franklin County.

**Stanton;** creek, a small right-hand tributary to New River in Carroll County.

**Stapleton Mills;** post village in Amherst County on the Chesapeake and Ohio Railway.

**Star;** post village in Carroll County.

**Starkey;** post village in Patrick County on the Norfolk and Western Railway. Altitude, 1,124 feet.

**Star Tannery;** post village in Frederick County.

**State Line;** small right-hand branch of Levisa Fork, rising in Buchanan County.

**Staunton;** city, situated in Augusta County, but independent in government, although it contains the court-house, on the Chesapeake and Ohio and the Baltimore and Ohio railroads. Altitude 1,366 feet. Population, 7,289.

**Staunton;** creek, a small right-hand branch of Clinch River.

**Staunton;** river. See Roanoke River.

**Stearnes;** post village in Fluvanna County.

**Stebbins;** post village in Halifax County.

**Steeleburg;** post village in Tazewell County.

**Steeles Tavern;** post village in Augusta County.

**Steffler;** run, a small left-hand branch of Middle Fork of Holston River in Smyth County.

**Stella;** post village in Patrick County on the Danville and Western Railway.

**Stephens;** run, a small left-hand tributary to Shenandoah River in Frederick and Warren counties.

**Stephens City;** town in Frederick County on the Baltimore and Ohio Railroad. Population, 490.

**Stephenson;** post village in Frederick County on the Baltimore and Ohio Railroad. Altitude, 499 feet.

**Sterling;** post village in Loudoun County on the Southern Railway.

- Sterling Knob**; summit in Nelson County.
- Stevensburg**; post village in Culpeper County.
- Stevensville**; post village in King and Queen County.
- Stewarts**; creek, a small left-hand tributary to Yadkin River in Patrick County.
- Stewarts Knob**; summit in Roanoke County. Elevation, 2,472 feet.
- Stewartsville**; post village in Bedford County.
- Stickleyville**; post village in Lee County. Altitude, 1,589 feet.
- Stile**; post village in Scott County.
- Stillhouse**; small right-hand branch of North Fork of Holston River in Smyth County.
- Stillhouse**; small left-hand branch of New River in Grayson County.
- Still House**; branch, a small left-hand tributary to James River in Alleghany County.
- Still House**; run, a small right-hand branch of Shenandoah River in Rockingham County.
- Stinson**; post village in Russell County.
- Stith**; post village in Halifax County.
- Stock**; creek, a small right-hand branch of Appomattox River in Amelia County.
- Stock**; creek, a small right-hand branch of Clinch River in Scott County.
- Stocker Knob**; summit in Lee County. Elevation, 2,500 feet.
- Stockton**; fork, a small left-hand tributary to James River in Albemarle County.
- Stocton**; post village in Henry County.
- Stoddert**; post village in Cumberland County.
- Stokes**; post village in Goochland County on the Chesapeake and Ohio Railway.
- Stokesland**; post village in Pittsylvania County on the Danville and Western and the Southern railways.
- Stone**; creek, a small right-hand tributary to North Fork of Powell River.
- Stone**; mountains of Lee, Wise, Russell, and Scott counties.
- Stonebridge**; post village in Clarke County.
- Stone Coal**; small right-hand branch of Powell River in Wise County.
- Stone Coal**; creek, a small right-hand tributary to James River in Botetourt County.
- Stonega**; post village in Wise County on the Interstate Railroad.
- Stonehouse**; creek, a small left-hand tributary to James River in Amherst County.
- Stoneleigh**; post village in Fairfax County.
- Stone Mountain**; creek, a small right-hand tributary to New River in Carroll County.
- Stone Mountain**; post village in Carroll County.
- Stone Mountain**; summit in Bedford County. Elevation, 1,144 feet.
- Stonewall**; creek, a small right-hand branch of James River in Appomattox County.
- Stonewall**; post village in Augusta County.
- Stoney**; creek in Dinwiddie County.
- Stoney**; run, a small right-hand tributary to Shenandoah River in Page County.
- Stony**; creek, a left-hand branch of Nottoway River in southeast Virginia.
- Stony**; creek, a small left-hand tributary to South Fork of Roanoke River in Montgomery County.
- Stony**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.
- Stony**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Stony**; creek, a small right-hand branch of Clinch River in Scott County.
- Stony**; creek, a small right-hand branch of New River in Giles County.
- Stony**; run, a small left-hand branch of Chickahominy River in Hanover County.
- Stony**; run, a small left-hand branch of Shenandoah River in Rockingham County.
- Stony**; run, a small left-hand tributary to Shenandoah River in Augusta County.
- Stony**; run, a small right-hand tributary to Shenandoah River in Augusta County.

- Stony**; run, a small right-hand tributary to Shenandoah River in Page County.
- Stony Battle**; creek, a small right-hand tributary to James River in Botetourt County.
- Stonycreek**; post village in Sussex County on the Atlantic Coast Line Railroad.
- Stonycross**; post village in Mecklenburg County.
- Stony Man**; post village in Page County.
- Stony Man**; summit of the Blue Ridge in Madison County. Elevation, 4,031 feet.
- Stonypoint**; post village in Albemarle County.
- Stonypoint Mills**; post village in Cumberland County.
- Stop**; post village in Carroll County.
- Stormont**; post village in Middlesex County.
- Stout**; small right-hand branch of New River in Grayson County.
- Stovall**; post village in Halifax County.
- Stovalls**; creek, a small left-hand branch of James River in Amherst County.
- Stover**; post village in Augusta River.
- Stowersville**; post village in Bland County.
- Straight**; creek, a small left-hand branch of Stone Creek in Lee County.
- Straight**; creek, a small right-hand tributary to Clinch River in Scott County.
- Straight**; creek, a small right-hand tributary to Potomac River in Highland County.
- Straight**; fork, a small branch of North Fork of Potomac River in Highland County.
- Straightstone**; creek, a small right-hand branch of Roanoke River in Pittsylvania County.
- Straightstone**; post village in Pittsylvania County.
- Stralia**; post village in Alleghany County.
- Strasburg**; town in Shenandoah County on the Southern Railway. Altitude, 637 feet. Population, 690.
- Stratford**; post village in Westmoreland County.
- Stratton**; post village in Dickenson County.
- Streets**; post village in Middlesex County.
- Strole**; post village in Page County.
- Strom**; post village in Botetourt County.
- Stroubles**; creek, a small right-hand branch of New River in Montgomery and Pulaski counties.
- Stuart**; run, a small left-hand tributary to James River in Highland and Bath counties.
- Stuart**; county seat of Patrick County on the Danville and Western Railway. Altitude, 1,188 feet. Population, 371.
- Stuart Mountain**; summit in Lick Mountain in Wythe County.
- Stuarts Draft**; post village in Augusta County on the Norfolk and Western Railway. Altitude, 1,385 feet.
- Stubbs**; post village in Spottsylvania County.
- Studley**; post village in Hanover County.
- Stuffle**; run, a small branch of Reed Creek, rising in Wythe County.
- Stull**; run, a small right-hand tributary to Shenandoah River in Augusta County.
- Stump**; post village in Washington County.
- Sturgeon**; creek, a small left-hand branch of North Fork of Holston River in Washington County.
- Sturgeon Point**; post village in Charles City County.
- Sturgeonville**; post village in Brunswick County.
- Suane**; creek, a small branch of Appomattox River in Appomattox County.
- Subletts**; post village in Powhatan County.
- Success**; post village in Warren County on the Norfolk and Western Railway.
- Suck**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Suck**; mountains in Bedford County. Elevation, 1,500 to 2,160 feet.

**Sudley Springs**; post village in Prince William County.

**Suffolk**; county seat of Nansemond County on the Atlantic Coast Line, the Norfolk and Western, the Seaboard Air Line, the Suffolk and Caroline, and the Southern railroads. Population, 3,827.

**Sugar**; creek, a small right-hand tributary to James River in Rockbridge County.

**Sugar**; run, a small left-hand branch of Walker Creek, in Giles County.

**Sugar**; run, a small right-hand branch of Cripple Creek in Wythe County.

**Sugar**; run, a small right-hand tributary to New River in Pulaski County.

**Sugar**; run, a small right-hand tributary to Powell River in Lee County.

**Sugar**; run, a small right-hand tributary to Roanoke River in Floyd County.

**Sugargrove**; post village in Smyth County.

**Sugarland**; run, a small right-hand branch of Potomac River in Loudoun County.

**Sugar Loaf**; summit in Augusta County. Elevation, 2,000 feet.

**Sugar Loaf**; summit in Botetourt County. Altitude, 2,393 feet.

**Sugar Loaf**; summit in Nelson County.

**Sugar Loaf**; summit in Roanoke County. Elevation, 2,000 feet.

**Sugar Ridge**; small left-hand branch of New River in Carroll County.

**Sugar Run**; mountains in Giles County. Elevation, 1,000 to 3,910 feet.

**Sulphur Mines**; post village in Louisa County.

**Sulphur Ridge**; spur from Prices Mountain in Botetourt County.

**Summerdean**; village in Augusta County.

**Summerduck**; post village in Fauquier County.

**Summerduck**; run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Summerfield**; post village in Grayson County.

**Summers**; post village in Rockbridge County.

**Summit**; post village in Spottsylvania County on the Richmond, Fredericksburg and Potomac Railroad.

**Sunbeam**; post village in Southampton County.

**Sunlight**; post village in Spottsylvania County.

**Sunnybank**; post village in Northumberland County.

**Sunnyside**; post village in Cumberland County on the Farmville and Powhatan Railroad.

**Sunrise**; post village in Bath County.

**Supin Lick**; mountains in Shenandoah and Rockbridge counties. Elevation, 1,500 to 2,000 feet.

**Supply**; post village in Essex County.

**Surber**; post village in Botetourt County on the Chesapeake and Ohio Railway.

**Surry**; county, situated in the southeastern part of the State on the Atlantic plain.

It lies on the south side of James River, at the mouth of Appomattox River.

The surface is but little elevated above tide. Area, 292 square miles. Population, 8,469—white, 3,286; negro, 5,183; foreign born, 72. County seat, Surry.

The mean magnetic declination in 1900 was 3° 45'. The mean annual rainfall is

40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Surry, Sussex and Southampton, and the Southern railways.

**Surry**; county seat of Surry County on the Surry, Sussex and Southampton Railway.

**Susan**; post village in Mathews County.

**Susong**; small right-hand branch of Beaver Creek, rising in Washington County.

**Sussex**; county, situated in the southern part of the State on the Atlantic plain.

It has a level surface but little elevated above tide. Area, 490 square miles.

Population, 12,082—white, 4,121; negro, 7,961; foreign born, 84. County seat,

Sussex. The mean magnetic declination in 1900 was 3° 30'. The mean annual

rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is trav-

ersed by the Southern, the Atlantic Coast Line, the Norfolk and Western, and the Surry, Sussex and Southampton railroads.

- Sussex**; county seat of Sussex County.  
**Sutherland**; post village in Dinwiddie County.  
**Sutherlin**; post village in Pittsylvania County on the Southern Railway.  
**Sutton**; post village in Buckingham County.  
**Swamp**; post village in Fauquier County.  
**Swans**; post village in Amherst County.  
**Swansboro**; post village in Chesterfield County.  
**Swansonville**; post village in Pittsylvania County.  
**Sweathouse**; creek, a small right-hand tributary to Appomattox River in Amelia County.  
**Sweet Chalybeate**; post village in Alleghany County.  
**Sweet Chalybeate**; spring in Alleghany County.  
**Sweet Hall**; post village in King William County on the Southern Railway.  
**Sweet Spring**; creek, a small right-hand tributary to Jackson River in Alleghany County.  
**Sweet Spring**; run, a small left-hand branch of South Fork of Roanoke River in Montgomery County.  
**Sweet Springs**; mountains in Alleghany County. Elevation, 2,000 to 3,500 feet.  
**Swepson**; post village in Mecklenburg County.  
**Swetnam**; post village in Fairfax County.  
**Swift**; creek, a small left-hand branch of Appomattox River in Chesterfield County.  
**Swift**; creek, a small right-hand tributary to James River in Chesterfield County.  
**Swift**; run, a small left-hand tributary to James River in Greene County.  
**Swift**; run, a small right-hand tributary to Shenandoah River in Rockingham County.  
**Swiftun**; post village in Rockingham County.  
**Swoope**; post village in Augusta County on the Chesapeake and Ohio Railway. Altitude, 1,650 feet.  
**Sword**; creek, a small right-hand tributary to Clinch River in Russell County.  
**Swordscreek**; post village in Russell County on the Norfolk and Western Railway. Altitude, 1,861 feet.  
**Swover**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.  
**Sycamore**; creek, a small right-hand tributary to Roanoke River in Pittsylvania County.  
**Sycamore Station**; post village in Pittsylvania County.  
**Sycoline**; creek, a small right-hand tributary to Potomac River in Loudoun County.  
**Sycoline**; post village in Loudoun County.  
**Sydney**; post village in Montgomery County.  
**Sydnorsville**; post village in Franklin County.  
**Sylvatus**; post village in Carroll County.  
**Symms**; gap in Peters Mountain in Giles County.  
**Syria**; post village in Madison County.  
**Ta**; river, a small right-hand branch of Mattaponi River in Spottsylvania County.  
**Tabb**; post village in York County.  
**Tabor**; post village in Washington County.  
**Tabscott**; post village in Goochland County.  
**Taccio**; village in Franklin County.  
**Tackett Mills**; post village in Stafford County.  
**Tacoma**; town in Wise County on the Norfolk and Western Railway. Altitude, 1,990 feet. Population, 247.  
**Taggart**; post village in Buckingham County.  
**Talley**; creek, a small right-hand tributary to York River.  
**Talleysville**; post village in New Kent County.

- Tally**; post village in Cumberland County.
- Talmash**; post village in Giles County.
- Talpa**; post village in Prince George County.
- Tamarack Ridge**; mountains in Highland County.
- Tamesa**; post village in Franklin County.
- Tampico**; post village in York County.
- Tamworth**; post village in Cumberland County.
- Tangier**; post village in Accomac County.
- Tanner**; branch, a small right-hand tributary to Appomattox River in Amelia County.
- Tanner**; creek, a tidal stream or estuary flowing into Hampton Roads in Princess Anne County.
- Tanner**; point of land extending into Tanner Creek where it empties into James River.
- Tannerscreek**; post village in Norfolk County.
- Tannersville**; post village in Tazewell County.
- Tanny**; post village in Mecklenburg County.
- Tanyard**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- Tan Yard**; village in Henry County.
- Tappahannock**; county seat of Essex County. Population, 554.
- Taranto**; post village in Augusta County.
- Tardy**; branch, a small left-hand tributary to Roanoke River in Campbell County.
- Tarlac**; post village in Floyd County.
- Taro**; post village in Charlotte County.
- Tarpon**; post village in Dickenson County.
- Tarrys Mill**; post village in Mecklenburg County.
- Tasley**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.
- Tasso**; post village in Wise County.
- Tate**; post village in Montgomery County on the Virginia and Southwestern Railway.
- Tattle**; small left-hand branch of Middle Fork of Holston River in Smyth County.
- Tatum**; post village in Orange County.
- Taylor**; creek, a small left-hand tributary to James River in Nelson County.
- Taylors**; creek, a small right-hand tributary to York River in Louisa and Hanover counties.
- Taylors**; mountains in Bedford County. Elevation, 1,500 to 2,555 feet.
- Taylorsburg**; village in Henry County.
- Taylors Store**; post village in Franklin County.
- Taylorstown**; post village in Loudoun County.
- Taylorsville**; post village in Hanover County on the Richmond, Fredericksburg and Potomac Railroad.
- Tazewell**; county, situated in the western part of the State in the Appalachian Valley. Its surface consists of an alternation of narrow ridges and valleys, drained in the main by Clinch River. On the north it extends into the Alleghany plateau, including a portion of the upper waters of the Tug Fork of Big Sandy. Area, 557 square miles. Population, 23,384—white, 19,802; negro, 3,582; foreign born, 410. County seat, Tazewell. The mean magnetic declination in 1900 was 1° 45'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.
- Tazewell**; county seat of Tazewell County on the Norfolk and Western Railway. Altitude, 2,372 feet. Population, 1,096.
- Tea**; mountains in Shenandoah County. Elevation, 2,000 feet.
- Tear Wallet**; creek, a small left-hand branch of Appomattox River in Cumberland County.

- Teck**; post village in King William County.  
**Tell**; post village in Pittsylvania County.  
**Temperanceville**; post village in Accomac County.  
**Tempest**; post village in Lunenburg County.  
**Templeman Crossroads**; post village in Westmoreland County.  
**Templeton**; branch, a small left-hand tributary to Clinch River in Scott County.  
**Templeton**; post village in Prince George County on the Chesapeake and Ohio Railway.  
**Tenth Legion**; village in Rockingham County.  
**Terrapin**; creek, a small left-hand tributary to Roanoke River in Bedford County.  
**Terrapin**; mountain in the Blue Ridge, Bedford County.  
**Terry**; post village in Halifax County.  
**Terrys Fork**; post village in Floyd County.  
**Terryville**; post village in Charlotte County.  
**Tettington**; post village in Charles City County.  
**Thalia**; post village in Princess Anne County on the Norfolk and Southern Railroad.  
**Thaxton**; post village in Bedford County on the Norfolk and Western Railway.  
Altitude, 950 feet.  
**The Falls**; post village in Nottoway County.  
**The Hollow**; post village in Patrick County.  
**Thelma**; post village in Louisa County.  
**Theological Seminary**; post village in Fairfax County.  
**The Plains**; post village in Fauquier County.  
**Thessalia**; post village in Giles County.  
**Theta**; post village in Campbell County.  
**Third**; branch, a small left-hand tributary to Appomattox River in Chesterfield County.  
**Thomasburg**; post village in Brunswick County.  
**Thompson**; creek, a small left-hand tributary to James River in Amherst County.  
**Thompson**; creek, a small right-hand branch of Clinch River in Russell County.  
**Thompson**; valley in Tazewell County.  
**Thompsons Crossroads**; post village in Louisa County.  
**Thompson Springs**; creek, a small left-hand tributary to James River in Bath County.  
**Thompson Valley**; post village in Tazewell County.  
**Thorn**; creek, a small right-hand branch of Cripple Creek in Wythe County.  
**Thornburg**; post village in Spottsylvania County.  
**Thorne**; ferry in New River, Wythe County.  
**Thornhill**; post village in Orange County.  
**Thornton**; gap in the Blue Ridge in Rappahannock County. Elevation, 2,279 feet.  
**Thornton**; river, a small right-hand tributary to Rappahannock River in Rappahannock County.  
**Thorny**; branch, a small right-hand tributary to Jackson River in Alleghany County.  
**Thorofare**; gap between Pond and Bull Run mountains.  
**Thoroughfare**; gap in Nelson County.  
**Thoroughfare**; mountains in Madison County. Elevation, 1,000 feet.  
**Thoroughfare**; post village in Prince William County on the Southern Railway.  
**Three**; creek, a right-hand branch of Nottoway River in southeastern Virginia.  
**Three Mile**; mountains in Shenandoah County. Elevation, 1,500 feet.  
**Three Ridges**; summits in Nelson County.  
**Three Square**; post village in Goochland County.  
**Three Top**; mountains in Shenandoah County. Elevation, 1,000 to 1,500 feet.  
**Throck**; post village in Prince Edward County.



- Thumb**; run, a small left-hand branch of Rappahannock River in Fauquier County.
- Thunder Hill**; summit in Botetourt County.
- Thurman**; post village in Bedford County.
- Tibitha**; post village in Northumberland County.
- Tice**; post village in Carroll County.
- Tidwells**; post village in Westmoreland County.
- Tilda**; post village in Lee County.
- Tilson**; gap in Walker Mountain in Wythe County.
- Tilson Mill**; post village in Bland County.
- Tim**; post village in Patrick County.
- Timber**; creek, a left-hand branch of Roanoke River in Botetourt and Roanoke counties.
- Timberridge**; post village in Rockbridge County on the Baltimore and Ohio Railroad.
- Timber Ridge**; mountains in Augusta County. Elevation, 2,500 to 3,000 feet.
- Timber Ridge**; mountains in Botetourt County. Elevation, 1,500 feet.
- Timber Ridge**; mountains in Frederick County, Va., and Morgan County, W. Va.
- Timbertree**; creek, a small right-hand tributary to Holston River, rising in Scott County.
- Timberville**; town in Rockingham County on the Southern Railway. Altitude, 1,018 feet. Population, 173.
- Timbo**; post village in Bedford County.
- Timothy**; post village in Craig County.
- Timsberry**; creek, a small right-hand tributary to James River in Chesterfield County.
- Tindall**; post village in Floyd County.
- Tinker**; mountains in Botetourt County. Elevation, 1,500 to 3,029 feet.
- Tinkerknob**; post village in Botetourt County.
- Tinkling**; post village in Lunenburg County.
- Tin Pot**; run, a small left-hand branch of Rappahannock River in Fauquier County.
- Tipton**; post village in Carroll County on the Norfolk and Western Railway.
- Tiptop**; post village in Tazewell County on the Norfolk and Western Railway. Altitude, 2,754 feet.
- Titus**; post village in Appomattox County.
- Toad**; run, a small left-hand tributary to James River in Rockbridge County.
- Toad**; run, a small right-hand tributary to James River in Rockbridge County.
- Toano**; post village in James City County on the Chesapeake and Ohio Railway.
- Tobacco**; creek, a small right-hand branch of Rappahannock River in Caroline County.
- Tobacco**; post village in Brunswick County.
- Tobacco Row**; mountains in Amherst County. Elevation 1,000 to 3,000 feet.
- Tobacco Row**; summit in Tobacco Row Mountains; a station in triangulation of the United States Coast and Geodetic Survey. Elevation, 2,938 feet.
- Tobacoville**; post village in Powhatan County on the Farmville and Powhatan Railroad.
- Tobax**; post village in Patrick County.
- Toga**; post village in Buckingham County.
- Toka**; village in Halifax County.
- Tola**; post village in Charlotte County.
- Tolers**; ferry over Roanoke River in Pittsylvania County.
- Toluca**; post village in Stafford County.
- Tomahawk**; creek, a small left-hand tributary to Appomattox River in Chesterfield County.
- Tomahawk**; creek, a small right-hand tributary to James River in Campbell County.
- Tomahawk**; mountain in Rockingham County.

- Tomahawk**; village in Pittsylvania County.  
**Tombs**; post village in Lancaster County.  
**Toms**; creek, a small right-hand branch of New River in Pulaski, Montgomery, and Franklin counties.  
**Tomsbrook**; post village in Shenandoah County on the Southern Railway. Altitude, 745 feet.  
**Toms Brook**; small left-hand tributary to Shenandoah River in Shenandoah County.  
**Tongue Quarter**; creek, a small right-hand tributary to James River in Buckingham County.  
**Tool**; creek, a small left-hand branch of North Fork of Holston River in Washington County.  
**Tooters**; creek, a small left-hand branch of James River in Albemarle County.  
**Topeco**; post village in Floyd County.  
**Tophet**; post village in Fairfax County.  
**Topnot**; post village in Shenandoah County.  
**Topping**; post village in Middlesex County.  
**Torega**; post village in Botetourt County.  
**Torry**; mountains in Augusta County.  
**Tory Knob**; summit in Bedford County. Elevation, 2,280 feet.  
**Touhes**; post village in Pittsylvania County on the Southern Railway.  
**Totaro**; post village in Brunswick County.  
**Totopotomoy**; creek, a small right-hand tributary to Pamunkey River in Hanover County.  
**Towell**; village in Lee County.  
**Tower Hill**; mountains in Bath County. Elevation, 2,000 to 3,000 feet.  
**Towerhill**; post village in Appomattox County.  
**Tower Mountain**; summit in Albemarle County. Elevation, 1,000 feet.  
**Town**; small left-hand branch of Clinch River in Tazewell County.  
**Town**; small right-hand branch of New River in Grayson County.  
**Town**; branch, a small right-hand tributary to James River in Botetourt County.  
**Town**; creek, a small right-hand tributary to Walker Creek, rising in Bland County.  
**Town**; creek, a small right-hand branch of Guest River in Wise County.  
**Town**; point on Elizabeth River in Norfolk County.  
**Town**; run, a small right-hand tributary to Potomac River in Fauquier County.  
**Townsend**; post village in Northampton County.  
**Trace**; branch, a small left-hand tributary to Levisa Fork in Buchanan County.  
**Tract**; fork, a small left-hand tributary to New River in Pulaski County.  
**Tract**; mountains in Wythe and Pulaski counties. Elevation 2,500 to 3,000 feet.  
**Trade**; post village in Amelia County.  
**Traders**; post village in Mathews County.  
**Traffic**; post village in Lunenburg County.  
**Trapp**; post village in Loudoun County.  
**Travis**; post village in Prince Edward County.  
**Trayfoot**; mountain in the Blue Ridge in Rockingham County.  
**Treakles**; post village in Lancaster County.  
**Tredway**; post village in Prince Edward County.  
**Trelow**; village in Pittsylvania County.  
**Trenholm**; post village in Powhatan County.  
**Trenton Mills**; post village in Cumberland County.  
**Trevilians**; post village in Louisa County on the Chesapeake and Ohio Railway. Altitude, 523 feet.  
**Triangle**; post village in Nottoway County.  
**Trice**; post village in Louisa County on the Chesapeake and Ohio Railway. Altitude, 1,816 feet.  
**Triford**; post village in Rockbridge County.

- Trigg**; post village in Giles County on the Norfolk and Western Railway.  
**Trilby**; post village in Northumberland County.  
**Trimble**; mountains in Augusta County.  
**Trimble**; post village in Highland County.  
**Trinity**; post village in Botetourt County.  
**Triplet**; post village in Brunswick County on the Southern Railway.  
**Trix**; post village in Lunenburg County.  
**Trone**; post village in Frederick County.  
**Troublesome**; creek, a small left-hand branch of Clinch River in Scott County.  
**Troublesome**; creek, a small left-hand tributary to Roanoke River in Campbell County.  
**Troublesome**; creek, a small right-hand tributary to James River in Buckingham County.  
**Trough**; run, a small left-hand tributary to Roanoke River in Bedford County.  
**Trout**; creek, a small right-hand tributary to James River in Roanoke County.  
**Troutdale**; post village in Grayson County.  
**Troutville**; post village in Botetourt County.  
**Trower**; post village in Accomac County.  
**Trueblue**; post village in Orange County.  
**Truhart**; post village in King and Queen County.  
**Truitt**; post village in Dinwiddie County.  
**Truxillo**; post village in Amelia County.  
**Tuan**; post village in Stafford County.  
**Tuckahoe**; creek, a small left-hand tributary to James River in Henrico County.  
**Tuckahoe**; post village in Henrico County on the Chesapeake and Ohio Railway.  
**Tucker**; post village in Buckingham County on the Norfolk and Western Railway.  
**Tuckerhill**; post village in Westmoreland County.  
**Tug**; post village in Grayson County.  
**Tuggles Gap**; post village in Patrick County.  
**Tulip**; post village in Frederick County.  
**Tumbez**; village in Russell County.  
**Tumbling**; creek, a small right-hand branch of North Fork of Holston River in Washington County.  
**Tunis**; post village in Rockingham County.  
**Tunstall**; post village in New Kent County on the Southern Railway.  
**Turbeville**; post village in Halifax County.  
**Turk**; gap in the Blue Ridge in Augusta County.  
**Turk Mountain**; summit in Augusta County.  
**Turk Mountain**; summit in Nelson County.  
**Turkey**; run, a small left-hand tributary to Shenandoah River in Frederick County.  
**Turkey**; run, a small right-hand tributary of Potomac River in Fauquier County.  
**Turkey Cock**; branch, a small left-hand tributary to Roanoke River in Charlotte County.  
**Turkey Cock**; run, a small right-hand tributary to Potomac River in Fairfax County.  
**Turkeycove**; post village in Lee County.  
**Turkey Egg**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.  
**Turkey Island**; creek, a small left-hand branch of James River in Henrico County.  
**Turkey Mountain**; summit in Amherst County. Elevation, 1,500 feet.  
**Turkey Mountain**; summit in Greene County. Elevation, 1,500 feet.  
**Turman**; post village in Floyd County.  
**Turnbull**; post village in Fauquier County.  
**Turner**; post village in Brunswick County.

**Turners**; ford of Roanoke River in Bedford County.

**Turners**; ford of Roanoke River in Franklin County.

**Turnip**; creek, a small left-hand tributary to Roanoke River in Charlotte County.

**Turpin**; creek, a small right-hand tributary to James River in Buckingham County.

**Turtlerock**; post village in Floyd County.

**Tuscarora**; creek, a small right-hand tributary to Potomac River in Loudoun County.

**Tuscola**; post village in Dickenson County.

**Tusekiah**; creek, a small left-hand branch of Meherrin River in Lunenburg County.

**Tussocky**; creek, a small right-hand tributary to James River in Campbell County.

**Twedys**; post village in Campbell County.

**Twelve O'clock Knob**; summit in Roanoke County. Elevation, 2,707 feet.

**Twin**; small left-hand branch of Slate Creek in Buchanan County.

**Two Mile**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Twymans Mill**; post village in Madison County.

**Twymans Store**; post village in Spottsylvania County.

**Tye**; river, a small left-hand branch of James River formed by North and South forks in Nelson County.

**Tye River**; gap in the Blue Ridge in Nelson County.

**Tye River Depot**; post village in Nelson County on the Southern Railway. Altitude, 548 feet.

**Tygars**; creek, a small right-hand tributary to Jackson River in Alleghany County.

**Tylers**; post village in Hanover County.

**Tyro**; post village in Nelson County.

**Uggal**; post village in Southampton County.

**Ula**; post village in King and Queen County.

**Ullaine**; post village in Essex County.

**Unaka**; post village in Tazewell County.

**Union**; creek, a small right-hand tributary to James River in Rockbridge County.

**Unionhall**; post village in Franklin County.

**Unionlevel**; post village in Mecklenburg County on the Southern Railway.

**Union Mills**; post village in Fluvanna County.

**Unionville**; post village in Orange County on the Potomac, Fredericksburg and Piedmont Railroad. Altitude, 500 feet.

**Unison**; post village in Loudoun County.

**Unity**; post village in Southampton County.

**Uno**; post village in Madison County.

**Upper Elk**; creek, a small right-hand branch of Knox Creek, rising in Buchanan County.

**Upper Rockhouse**; small right-hand branch of Slate Creek, a tributary to Levisa Fork, in Buchanan County.

**Upperville**; town in Fauquier County. Population, 376.

**Upper Zion**; post village in Caroline County.

**Upright**; post village in Essex County.

**Upton Hill**; summit in Fairfax County.

**Urbanna**; post village in Middlesex County.

**Ursus**; post village in Grayson County.

**Utt**; post village in Carroll County.

**Vale**; post village in Fairfax County.

**Valentine**; creek, a small right-hand branch of Roanoke River in Pittsylvania County.

**Valentines**; post village in Brunswick County.

**Valeria**; post village in Nansemond County.

- Valley**; creek, a small left-hand tributary to South Fork of Holston River in Washington County.
- Valley**; creek, a small left-hand tributary to Clinch River, rising in Scott County.
- Valley Center**; post village in Highland County.
- Valleycreek**; post village in Scott County.
- Valley Mills**; post village in Augusta County.
- Van**; post village in Lee County.
- Vanburen Furnace**; post village in Shenandoah County.
- Vance**; post village in Pittsylvania County.
- Vancluse**; gold mine in Spottsylvania County.
- Vanderpool**; gap between Monterey and Back Creek mountains, caused by a tributary to James River.
- Vanderpool**; post village in Highland County.
- Vandola**; post village in Pittsylvania County.
- Vanlear**; post village in Augusta County.
- Varallo**; post village in Patrick County.
- Vareo**; post village in Louisa County.
- Variety Mills**; post village in Nelson County.
- Variety Springs**; post village in Augusta County on the Chesapeake and Ohio Railway.
- Varinagrove**; village in Henrico County.
- Varst**; post village in Madison County.
- Vaulcluse**; post village in Frederick County on the Baltimore and Ohio Railroad.
- Vaughn**; post village in Floyd County.
- Vaughns**; creek, a small right-hand tributary to Appomattox River, between Prince Edward and Appomattox counties.
- Vaught**; small left-hand branch of Middle Fork of Holston River in Smyth County.
- Vawters Store**; post village in Louisa County.
- Veach**; post village in Lee County.
- Venable**; creek, a small left-hand tributary to James River in Fluvanna County.
- Venables**; bridge across Appomattox River, between Prince Edward and Buckingham counties.
- Venner**; post village in Prince Edward County.
- Venrick**; run, a small branch of Reed Creek in Wythe County.
- Venter**; post village in King William County.
- Vera**; post village in Appomattox County.
- Verano**; post village in Patrick County.
- Verbena**; post village in Page County.
- Verdant**; post village in Lee County.
- Verdierville**; post village in Orange County on the Potomac, Fredericksburg and Piedmont Railroad. Altitude, 514 feet.
- Verdon**; post village in Hanover County on the Chesapeake and Ohio Railway.
- Vermilion**; post village in Appomattox County.
- Verna**; post village in Southampton County.
- Vernonhill**; post village in Halifax County.
- Vernon Mills**; post village in Fauquier County.
- Vesta**; post village in Patrick County.
- Vestal**; post village in Washington County.
- Vesuvius**; post village in Rockbridge County on the Norfolk and Western Railway. Altitude, 1,417 feet.
- Vicar Switch**; post village in Montgomery County.
- Vick**; post village in Floyd County.
- Vicksville**; post village in Southampton County.
- Victoria**; mines in Rockbridge County.
- Vienna**; town in Fairfax County on the Southern Railway. Population, 317.

- Viewtown**; post village in Rappahannock County.
- View Tree**; mountains in Fauquier County. Elevation, 500 to 750 feet.
- Vigor**; post village in Louisa County.
- Villa**; post village in Franklin County.
- Village**; post village in Northumberland County.
- Vilna**; post village in Highland County.
- Vincent Store**; post village in Charlotte County.
- Vine**; post village in Princess Anne County.
- Vinita**; post village in Goochland County on the Chesapeake and Ohio Railway.
- Vinton**; town in Roanoke County on the Norfolk and Western Railway. Altitude, 910 feet. Population, 1,438.
- Virgilina**; town in Halifax County on the Southern Railway. Population, 200.
- Virginia Beach**; resort on the Atlantic coast in Princess Anne County on the Norfolk and Southern Railroad.
- Virginia City**; post village in Wise County on the Norfolk and Western Railway.
- Vivian**; post village in King George County.
- Void**; post village in Mecklenburg County.
- Volens**; post village in Halifax County.
- Volney**; post village in Grayson County.
- Vontay**; post village in Hanover County.
- Vulcan**; post village in Orange County.
- Wachapreague**; post village in Accomac County.
- Waddy**; post village in Spottsylvania County.
- Wades**; post village in Bedford County.
- Wadesville**; post village in Clarke County.
- Waldsboro**; post village in Franklin County on the Norfolk and Western Railway. Altitude, 1,260 feet.
- Wainwright**; post village in Grayson County.
- Wake**; post village in Middlesex County.
- Wakefield Station**; post village in Sussex County on the Norfolk and Western Railway.
- Wakema**; post village in King William County.
- Walcot**; post village in Floyd County.
- Waldelock**; post village in Hanover County.
- Waldrop**; post village in Louisa County.
- Walker**; creek, a right-hand tributary to New River, rising in Bland County and flowing northeast into New River.
- Walker**; creek, a small left-hand tributary to James River in Augusta County.
- Walker**; creek, a small tributary to Middle Fork of Holston River in Smyth County.
- Walker**; ford of James River in Amherst County.
- Walker**; mountains in Bath County. Elevation, 2,000 to 2,500 feet.
- Walker**; mountains extending from Washington to Bland counties. Elevation, 2,500 to 4,000 feet.
- Walkerford**; post village in Amherst County on the Chesapeake and Ohio Railway.
- Walkers**; creek, a small left-hand tributary to James River in Rockbridge County.
- Walkers**; mountains in Bath and Augusta counties. Elevation, 2,500 to 3,000 feet.
- Walkers**; post village in New Kent County on the Chesapeake and Ohio Railway.
- Walkerton**; post village in King and Queen County.
- Wallace**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- Wallace**; creek, a small right-hand branch of Appomattox River in Dinwiddie County.
- Wallace**; post village in Washington County on the Norfolk and Western Railway. Altitude, 1,880 feet.
- Wallaceton**; post village in Norfolk County.
- Wallen**; creek, a small left-hand branch of Powell River in Lee County.

**Wallen Ridge**; mountains in Lee County.

**Wallens Ridge**; mountains in the southeastern part of Lee County, extending southwest into Tennessee.

**Walters**; post village in Henry County on the Norfolk and Western Railway. Altitude, 730 feet.

**Walls Bridge**; post village in Surry County.

**Walnut**; branch, a small left-hand tributary to James River in Albemarle County.

**Walnuthill**; post village in Lee County.

**Walthall Store**; post village in Brunswick County.

**Walton**; fork, a small right-hand tributary to James River in Buckingham County.

**Walton Furnace**; post village in Wythe County.

**Waltons Store**; post village in Louisa County.

**Wampler**; small right-hand branch of Cripple Creek in Wythe County.

**Wampler**; post village in Dickenson County.

**Wan**; post village in Gloucester County.

**Waqua**; post village in Brunswick County.

**Ward**; small right-hand branch of Cripple Creek in Wythe County.

**Ward**; cove in Tazewell County.

**Wardgap**; post village in Carroll County.

**Wards**; fork, a small left-hand tributary to Roanoke River in Charlotte County.

**Wardsfork Mills**; post village in Charlotte County.

**Wards Mill**; branch, a small right-hand tributary to New River in Carroll County.

**Wards Mill**; post village in Carroll County.

**Wards Road**; ferry over Roanoke River in Pittsylvania County.

**Wardtown**; post village in Northampton County.

**Ware**; creek, a small right-hand branch of Rappahannock River in Caroline County.

**Warehouse**; post village in Mathews County.

**Wareneck**; post village in Gloucester County.

**Wares Wharf**; post village in Essex County.

**Warfield**; post village in Brunswick County on the Seaboard Air Line Railway.

**Warminster**; post village in Nelson County on the Chesapeake and Ohio Railway.

**Warm Spring**; mountains in Alleghany and Bath counties. Elevation, 2,000 to 4,000 feet.

**Warm Spring**; run, a small left-hand tributary to James River in Bath County.

**Warm Springs**; county seat of Bath County.

**Warner**; post village in Middlesex County.

**Warren**; county, situated in the northern part of the State and including a part of the Shenandoah Valley, its eastern boundary being the summit of the Blue Ridge. The surface consists in part of a level valley, and in part of the heavy spurs of the Blue Ridge; the altitude ranges from 500 to 3,300 feet upon the Blue Ridge. Area, 226 square miles. Population, 8,837—white, 7,372; negro, 1,463; foreign born, 40. County seat, Front Royal. The mean magnetic declination in 1900 was  $3^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western and the Southern railways.

**Warren**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Warrenton**; county seat of Fauquier County on the Southern Railway. Population, 1,827.

**Warsaw**; county seat of Richmond County.

**Warwick**; county, situated in the eastern part of the State on the north bank of James River on the Atlantic plain. The surface is low and level, and but little elevated above tide. Area, 85 square miles. Population, 4,888—white, 1,159; negro, 3,729; foreign born, 82. County seat, Denbigh. The mean magnetic declination in 1900 was  $4^{\circ}$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**Warwick**; run, a small right-hand tributary to Jackson River in Highland County.

**Warwick Ridge**; mountains in Bath County. Elevation, 2,500 to 3,000 feet.

**Warwick Swamp**; small right-hand tributary to James River in Prince George County.

**Washikee**; post village in Greensville County.

**Washington**; county, situated in the southwestern part of the State. It is drained by the three main forks of Holston River, and its surface consists mainly of the valley through which they flow, limited on the north by Clinch Mountain. The altitude ranges from 1,600 to 4,000 feet above sea level. Area, 605 square miles. Population, 28,995—white, 26,433; negro, 2,555; foreign born, 33. County seat, Abingdon. The main annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western and the Virginia and Southwestern railways.

**Washington**; county seat of Rappahannock County. Population, 300.

**Washington**; point on the eastern branch of Elizabeth River in Norfolk County.

**Waskey Mills**; post village in Botetourt County.

**Wasp**; post village in Carroll County.

**Wat**; post village in Culpeper County.

**Watauga**; post village in Washington County on the Virginia-Carolina Railway.

**Watch**; run, a small right-hand tributary to James River in Chesterfield County.

**Waterfall**; post village in Prince William County.

**Waterford**; town in Loudoun County. Population, 383.

**Waterlick**; post village in Warren County on the Southern Railway. Altitude, 550 feet.

**Waterloo**; post village in Culpeper County on the Washington Southern Railway.

**Wateroak**; post village in Princess Anne County.

**Waterview**; post village in Middlesex County.

**Waterway**; post village in Princess Anne County.

**Watery**; mountains in Fauquier County. Elevation, 750 to 1,000 feet.

**Watkins**; post village in Halifax County on the Southern Railway.

**Watson**; creek, a small right-hand tributary to Appomattox River in Nottoway County.

**Watson**; post village in Loudoun County.

**Wattsboro**; post village in Lunenburg County.

**Wattsville**; post village in Accomac County.

**Waugh**; post village in Bedford County on the Chesapeake and Ohio Railway.

**Waughes**; ford of James River in Amherst County.

**Wauk**; point in Princess Anne County, extending into North Landing River.

**Waverly**; town in Sussex County on the Norfolk and Western and the Southern railways. Population, 493.

**Waxpool**; post village in Loudoun County.

**Way**; post village in Amherst County.

**Waycross**; post village in Highland County.

**Wayland**; post village in Scott County.

**Waynesboro**; town in Augusta County on the Chesapeake and Ohio Railway. Altitude, 1,295 feet. Population, 856.

**Weal**; post village in Pittsylvania County.

**Wealthia**; post village in Buckingham County.

**Weaver Knob**; summit in Bedford County. Elevation, 2,615 feet.

**Weavers**; creek, a small right-hand branch of Clinch River, rising in Russell County.

**Webb**; post village in Carroll County.

**Webb Mill**; creek, a small left-hand tributary to Appomattox River in Appomattox County.

**Webbs**; ford of Roanoke River in Bedford County.

**Weddle**; post village in Floyd County.



- Wedstone**; creek, a small left-hand branch of South Fork of Holston River in Smyth County.
- Weedonville**; post village in King George County.
- Weems**; post village in Lancaster County.
- Welbourne**; post village in Loudoun County.
- Welchburg**; post village in Scott County.
- Welches**; run, a small left-hand tributary to Roanoke River in Botetourt County.
- Welchs**; post village in Caroline County.
- Welcome**; post village in King George County.
- Wellford**; post village in Richmond County.
- Wellington**; post village in Prince William County on the Southern Railway.
- Wellville**; post village in Nottoway County on the Norfolk and Western Railway.
- Wellwater**; post village in Buckingham County.
- Welsh**; summit in Nelson County.
- Wenonda**; post village in Pittsylvania County.
- Wert**; post village in Appomattox County.
- Wesson**; post village in Lee County.
- West**; fork, a small right-hand tributary to New River in Grayson and Wythe counties.
- West**; mountain in Rockingham County. Elevation, 2,500 feet.
- West**; run, a small left-hand tributary to Shenandoah River in Frederick and Warren counties.
- West Appomattox**; county seat of Appomattox County.
- West Augusta**; post village in Augusta County.
- Westboro**; post village in Dinwiddie County.
- West Clifton Forge**; town in Alleghany County. Population, 367.
- Westend**; post village in Fairfax County.
- Westhope**; post village in Sussex County.
- Westland**; post village in Lancaster County.
- West Lynchburg**; post village in Campbell County.
- Westmoreland**; county, situated in the eastern part of the State on the Atlantic plain, fronting upon the Potomac. The surface is but little elevated above tide. It rises in the interior to altitudes of 100 feet or more. Area, 245 square miles. Population, 9,243—white, 4,381; negro, 4,861; foreign born, 37. County seat, Montross. The mean magnetic declination in 1900 was 4° 30'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.
- West Norfolk**; post village in Norfolk County on the Southern Railway.
- Westover**; post village in Charles City County.
- West Point**; town in King William County. Population, 1,307.
- Westview**; post village in Goochland County.
- Westwood**; post village in Hanover County.
- Wetsels**; post village in Greene County.
- Weyanoke**; post village in Charles City County.
- Weyers Cave**; post village in Augusta County on the Baltimore and Ohio Railroad. Altitude, 1,152 feet.
- Whaleyville**; post village in Nansemond County.
- Wheaton**; post village in Lancaster County.
- Wheatfield**; post village in Shenandoah County.
- Wheatland**; post village in Loudoun County.
- Wheeler Mountain**; summit in Pittsylvania County. Elevation, 1,000 feet.
- Whetstone**; creek, a small left-hand tributary to Nottoway River in Nottoway County.
- Whipping**; creek, a small left-hand branch of Roanoke River in Campbell County.

**Whipponock**; creek, a small right-hand branch of Appomattox River in Dinwiddie County.

**Whiskey**; creek, a small left-hand tributary to Shenandoah River in Augusta County.

**Whispering**; creek, a small right-hand tributary to James River in Buckingham County.

**Whistle**; creek, a small left-hand tributary to James River in Rockbridge County.

**Whit**; post village in Clarke County.

**Whitacre**; post village in Frederick County.

**Whiteforge**; post village in Scott County.

**Whitegate**; post village in Giles County.

**Whitehall**; post village in Frederick County on the Chesapeake and Ohio Railway.

**Whitehouse**; small left-hand branch of South Fork of Roanoke River in Montgomery County.

**Whitehouse**; post village in New Kent County on the Southern Railway.

**Whitemarsh**; post village in Gloucester County.

**White Oak**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.

**Whiteoak**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.

**White Oak**; creek, a small right-hand tributary to York River.

**White Oak**; run, a small right-hand tributary to Rappahannock River in Madison County.

**Whiteplains**; post village in Brunswick County.

**Whitepoint**; post village in Westmoreland County.

**Whitepost**; post village in Clarke County on the Norfolk and Western Railway.

**White Rock**; gap in Rich Patch Mountain caused by Cane Creek in Alleghany County.

**White Rock**; mountains in Smyth County. Elevation, 3,000 to 4,000 feet.

**Whiterock**; post village in Bedford County.

**White Rock Mountain**; summit in Rockbridge County.

**White Rocks**; summit on the southwestern edge of Mill Mountains. Altitude, 4,548 feet.

**Whites**; gap in the Blue Ridge in Amherst County.

**Whites**; post village in Caroline County.

**Whites**; run, a small left-hand tributary to James River in Rockbridge County.

**Whiteshoals**; post village in Lee County.

**Whitesides**; run, a small left-hand tributary to James River in Rockbridge County.

**Whitestone**; post village in Lancaster County.

**White Top**; creek, a left-hand tributary to South Fork of Holston River in Washington and Smyth counties.

**Whitetop**; post village in Grayson County. Altitude, 5,530 feet.

**Whitley**; small right-hand branch of Walker Creek, rising in Giles County.

**Whitley**; post village in Isle of Wight County.

**Whitley**; fork, a small right-hand tributary to Powell River in Wise County.

**Whitlock**; post village in Halifax County.

**Whitmell**; post village in Pittsylvania County.

**Whitney**; island of James River in Appomattox County.

**Whittles Depot**; post village in Pittsylvania County on the Southern Railway. Altitude, 812 feet.

**Whittles Mills**; post village in Lunenburg County.

**Wickliffe**; post village in Clarke County.

**Wicomico**; post village in Gloucester County.

- Wicomico Church**; post village in Northumberland County.
- Widewater**; post village in Stafford County on the Richmond, Fredericksburg and Potomac Railroad.
- Widner**; creek, a small left-hand branch of South Fork of Holston River in Washington County.
- Wiedman**; post village in Surry County.
- Wiehle**; town in Fairfax County on the Southern Railway. Population, 51.
- Wier**; post village in Highland County.
- Wiggington Knob**; summit in Bedford County. Elevation, 2,461 feet.
- Wightman**; post village in Mecklenburg County.
- Wilburn**; bridge across Appomattox River from Buckingham to Prince Edward County.
- Wilburn**; post village in Lunenburg County.
- Wildcat**; summit in Wise County.
- Wild Cat Knob**; summit in Bedford County. Elevation, 2,000 feet.
- Wild Cat Mountain**; summit in Botetourt County.
- Wilderness**; post village in Orange County.
- Wilderness**; run, a small right-hand tributary to Rappahannock River in Spotsylvania County.
- Wildway**; post village in Appomattox County.
- Wiles**; village in Pittsylvania County.
- Wilhoit**; post village in Albemarle County.
- Wilkie Ridge**; summit in Rockbridge County.
- Willard**; post village in Loudoun County.
- Willcox Wharf**; post village in Charles City County.
- Williamsburg**; county seat of James City County, but independent in government. Population, 2,044.
- Williams Mills**; post village in Lunenburg County.
- Williamsville**; post village in Bath County.
- Williams Wharf**; post village in Mathews County.
- Willis**; post village in Floyd County.
- Willis**; run, a right-hand branch of James River in Buckingham and Cumberland counties.
- Willis Mountain**; summit in Buckingham County. Elevation, 1,159 feet.
- Willoughby**; bay on the coast north of Norfolk from Hampton Roads in Princess Anne County.
- Willoughby Beach**; post village in Norfolk County.
- Willoughby Spit**; point of sand dividing Willoughby Bay from Chesapeake Bay in Princess Anne County.
- Willow**; village in Amherst County.
- Willowbrook**; post village in Louisa County.
- Willowspring**; post village in Russell County.
- Wilmington**; post village in Fluvanna County.
- Wilson**; creek, a small left-hand tributary to James River in Alleghany, Bath, and Highland counties.
- Wilson**; creek, a small right-hand branch of New River in Grayson County.
- Wilson**; creek, a small right-hand tributary to James River in Botetourt County.
- Wilson Falls**; run, a small left-hand tributary to James River in Rockbridge County.
- Wilsons**; post village in Dinwiddie County.
- Wilton**; post village in Middlesex County on the Chesapeake and Ohio Railway. Altitude, 996 feet.
- Winchester**; county seat of Frederick County, but independent in government. Population, 5,161.

- Winder**; post village in Wise County on the Baltimore and Ohio Railroad. Altitude, 717 feet.
- Windsor Station**; post village in Isle of Wight County on the Norfolk and Western Railway.
- Windy**; gap of the Blue Ridge in Franklin County.
- Windy**; post village in Amherst County.
- Wine**; post village in Shenandoah County.
- Winfall**; post village in Campbell County on the Norfolk and Western Railway. Altitude, 848 feet.
- Winfrey**; post village in Culpeper County.
- Wingfield Mountain**; summit in Bedford County. Elevation, 1,299 feet.
- Wingina**; post village in Nelson County on the Chesapeake and Ohio Railway.
- Wingo**; post village in Giles County.
- Winnecum**; creek, a small right-hand tributary to Appomattox River in Nottoway County.
- Winnie**; post village in Nottoway County.
- Winston**; post village in Culpeper County on the Southern Railway.
- Winterham**; post village in Amelia County.
- Winterpock**; creek, a small left-hand branch of Appomattox River in Chesterfield County.
- Winterpock**; post village in Chesterfield County on the Farmville and Powhatan Railroad.
- Winticomack**; creek, a small right-hand branch of Appomattox River in Amelia County.
- Wirtz**; post village in Franklin County on the Norfolk and Western Railway.
- Wise**; county, situated in the southwestern part of the State. Its area consists in part of an alternation of narrow ridges and valleys, while the northern part lies on the Alleghany plateau, which is here deeply dissected into ridges and gorges. It is drained mainly by Powell River. Area, 413 square miles. Population, 19,653—white, 17,688; negro, 1,965; foreign born, 393. County seat, Wise. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western and the Interstate railways.
- Wise**; county seat of Wise County on the Virginia and Kentucky Railroad.
- Wiserville**; post village in Chesterfield County.
- Wishart**; post village in Accomac County.
- Witcher Knob**; summit in Carroll County. Elevation, 2,500 to 2,912 feet.
- Witchers**; creek, a small left-hand branch of Roanoke River in Bedford County.
- Wittens Mills**; post village in Tazewell County on the Norfolk and Western Railway.
- Witts**; post village in Nelson County.
- Woburn**; post village in Mecklenburg County.
- Wolf**; branch, a small right-hand tributary to New River in Carroll County.
- Wolf**; creek, a small left-hand branch of Roanoke River in Roanoke and Bedford counties.
- Wolf**; creek, a right-hand branch of New River, rising in Bland County.
- Wolf**; creek, a small right-hand branch of New River, rising in Tazewell County and flowing northeast to where it empties into New River.
- Wolf**; creek, a small right-hand tributary to South Fork of Holston River in Washington County.
- Wolf**; run, a small left-hand tributary to North Fork of Holston River, rising in Washington County.
- Wolf Creek**; mountains in Giles and Bland counties. Elevation, 2,000 to 3,000 feet.
- Wolfglade**; post village in Carroll County.
- Wolfpen**; small left-hand branch of Slate Creek in Buchanan County.
- Wolf Pen**; branch, a small left-hand tributary to Walker Creek in Bland County.

**Wolf Pen**; branch, a small right-hand tributary to Walker Creek, rising in Bland County.

**Wolf Ridge**; mountains in Rockingham and Augusta counties.

**Wolfrun**; post village in Washington County.

**Wolftown**; post village in Madison County.

**Wolftrap**; post village in Halifax County on the Southern Railway.

**Wolf Trap Shoal**; run, a small right-hand tributary to Potomac River in Fairfax County.

**Woltz**; post village in Carroll County.

**Wood**; post village in Scott County.

**Woodbridge**; post village in Prince William County

**Woodburn**; post village in Loudoun County.

**Woodend**; post village in Lunenburg County.

**Woodford**; post village in Caroline County.

**Woodlawn**; post village in Carroll County.

**Woodridge**; post village in Albemarle County.

**Woods**; run, a small left-hand tributary to James River in Rockbridge County.

**Woods Crossroads**; post village in Gloucester County.

**Woods Mountain**; summit in Buckingham County.

**Woods Mountain**; summit in Nelson County.

**Woodstock**; gap between Three Top and Powells mountains in Shenandoah County.

**Woodstock**; county seat of Shenandoah County on the Baltimore and Ohio Railroad. Altitude, 820 feet. Population, 1,069.

**Woodview**; post village in Brunswick County.

**Woodville**; post village in Rappahannock County.

**Woody**; creek, a small right-hand tributary to Appomattox River in Nottoway County.

**Woolsey**; post village in Prince William County.

**Woolwine**; post village in Patrick County.

**Worlds**; post village in Pittsylvania County.

**Worrells**; post village in Southampton County.

**Worsham**; post village in Prince Edward County.

**Wreck Island**; creek, a small right-hand tributary to James River in Appomattox County.

**Wren**; post village in Charlotte County on the Southern Railway.

**Wright Valley**; creek, a small tributary to Bluestone River in Tazewell County.

**Wyatt**; post village in Franklin County.

**Wyche**; post village in Brunswick County.

**Wylies**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Wylliesburg**; post village in Charlotte County.

**Wyndham**; post village in Powhatan County.

**Wysor**; post village in Pulaski County.

**Wythe**; county, situated in the southwestern part of the State in the Appalachian Valley. It is limited on the south by Iron Mountain and on the north by Walker Mountain. It is drained by Reed and Cripple creeks, tributaries to New River. The surface consists of an alternation of narrow ridges and valleys, constituting a part of the Appalachian Valley. Area, 474 square miles. Population, 20,437—white, 17,653; negro, 2,783; foreign born, 108. County seat, Wytheville. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.

**Wytheville**; county seat of Wythe County on the Norfolk and Western Railway. Altitude, 2,230 feet. Population, 3,003.

**Yact**; post village in Grayson County.

- Yak**; post village in Pittsylvania County.
- Yale**; post village in Sussex County on the Southern Railway.
- Yancey**; post village in Rockingham County on the Norfolk and Western Railway.
- Yancey Mills**; post village in Albemarle County.
- Yards**; post village in Tazewell County.
- Yellow**; creek, a small left-hand branch of Guest River in Wise County.
- Yellow**; right-hand branch of Powell River in Lee County.
- Yellowbranch**; post village in Campbell County.
- Yellow Mountain**; summit in Roanoke County. Elevation, 2,191 feet.
- Yellow Sulphur Springs**; post village in Montgomery County.
- Yokum**; village in Lee County.
- York**; county, situated in the eastern part of the State on the south side of York River at its mouth, and on the west shore of Chesapeake Bay. It is level and but little elevated. Area, 124 square miles. Population, 7,482—white, 3,401; negro, 4,081; foreign born, 42. County seat, Yorktown. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio Railway.
- York**; river, which heads in two forks, known as the Mattaponi and Pamunkey, which have their sources in the Piedmont region. They unite at Westpoint, which is commonly regarded as the head of York River. Below this point it has the aspect of a tidal estuary. It flows into Chesapeake Bay below Yorktown. It is navigable to the forks.
- Yorktown**; county seat of York County. Population, 151.
- Yost**; post village in Bath County.
- Younge**; post village in Spottsylvania County on the Norfolk and Western Railway. Altitude, 1,301 feet.
- Yuma**; post village in Scott County.
- Za**; post village in Orange County.
- Zacata**; post village in Westmoreland County.
- Zack**; post village in Rockbridge County.
- Zanoni**; post village in Gloucester County.
- Zanto**; post village in Louisa County.
- Zaza**; post village in Essex County.
- Zenda**; post village in Rockingham County.
- Zenobia**; post village in Washington County.
- Zepp**; post village in Shenandoah County.
- Zero**; post village in Brunswick County.
- Zetta**; post village in Augusta County.
- Zingara**; post village in Brunswick County.
- Zion**; post village in Louisa County.
- Zion Mills**; post village in Lee County.
- Zions Hill**; village in Botetourt County.
- Zoar**; post village in Chesterfield County.
- Zollman**; post village in Rockbridge County.
- Zulla**; post village in Fauquier County.
- Zuni**; post village in Isle of Wight County on the Norfolk and Western Railway.



## PUBLICATIONS OF UNITED STATES GEOLOGICAL SURVEY.

[Bulletin No. 22.]

The publications of the United States Geological Survey consist of (1) **Annual Reports**, (2) **Monographs**, (3) **Professional Papers**, (4) **Bulletins**, (5) **Mineral Resources**, (6) **Water-Supply and Irrigation Papers**, (7) **Topographic Atlas of United States—folios and separate sheets thereof**, (8) **Geologic Atlas of United States—folios thereof**. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists may be had on application.

The Professional Papers, Bulletins, and Water-Supply Papers treat of a variety of subjects, and the total number issued is large. They have therefore been classified into the following series: A, Economic geology; B, Descriptive geology; C, Systematic geology and paleontology; D, Petrography and mineralogy; E, Chemistry and physics; F, Geography; G, Miscellaneous; H, Forestry; I, Irrigation; J, Water storage; K, Pumping water; L, Quality of water; M, General hydrographic investigations; N, Water power; O, Underground waters; P, Hydrographic progress reports. This bulletin is the fortieth in Series F, the complete list of which follows (all are bulletins thus far):

### SERIES F. GEOGRAPHY.

5. Dictionary of altitudes in United States, by Henry Gannett. 1884. 325 pp. (Out of stock; see Bulletin 160.)
6. Elevations in Dominion of Canada, by J. W. Spencer. 1884. 43 pp. (Out of stock.)
13. Boundaries of United States and of the several States and Territories, with historical sketch of territorial changes, by Henry Gannett. 1885. 135 pp. (Out of stock; see Bulletin 171.)
48. On form and position of sea level, by R. S. Woodward. 1888. 88 pp. (Out of stock.)
49. Latitudes and longitudes of certain points in Missouri, Kansas, and New Mexico, by R. S. Woodward. 1889. 131 pp.
50. Formulas and tables to facilitate the construction and use of maps, by R. S. Woodward. 1889. 124 pp. (Out of stock.)
70. Report on astronomical work of 1889 and 1890, by R. S. Woodward. 1890. 79 pp.
72. Altitudes between Lake Superior and Rocky Mountains, by Warren Upham. 1891. 229 pp.
76. Dictionary of altitudes in United States (second edition), by Henry Gannett. 1891. 363 pp. (Out of stock; see Bulletin 160.)
115. Geographic dictionary of Rhode Island, by Henry Gannett. 1894. 31 pp.
116. Geographic dictionary of Massachusetts, by Henry Gannett. 1894. 126 pp.
117. Geographic dictionary of Connecticut, by Henry Gannett. 1894. 67 pp.
118. Geographic dictionary of New Jersey, by Henry Gannett. 1894. 131 pp.
122. Results of primary triangulation, by Henry Gannett. 1894. 412 pp., 17 pls. (Out of stock.)
123. Dictionary of geographic positions, by Henry Gannett. 1895. 183 pp., 1 map. (Out of stock.)
154. Gazetteer of Kansas, by Henry Gannett. 1898. 240 pp., 6 pls.
160. Dictionary of altitudes in United States (third edition), by Henry Gannett. 1899. 775 pp. (Out of stock.)
166. Gazetteer of Utah, by Henry Gannett. 1900. 43 pp., 1 map.
169. Altitudes in Alaska, by Henry Gannett. 1900. 13 pp.
170. Survey of boundary line between Idaho and Montana from international boundary to crest of Bitterroot Mountains, by R. U. Goode. 1900. 67 pp., 14 pls.
171. Boundaries of United States and of the several States and Territories, with outline of history of all important changes of territory (second edition), by Henry Gannett. 1900. 142 pp., 53 pls. (Out of stock.)
174. Survey of northwestern boundary of United States, 1857-1861, by Marcus Baker. 1900. 78 pp., 1 pl.
175. Triangulation and spirit leveling in Indian Territory, by C. H. Fitch. 1900. 141 pp., 1 pl.
181. Results of primary triangulation and primary traverse, fiscal year 1900-1901, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1901. 240 pp., 1 map.
183. Gazetteer of Porto Rico, by Henry Gannett. 1901. 51 pp.



## II

## PUBLICATIONS U. S. GEOLOGICAL SURVEY.

185. Results of spirit leveling, fiscal year 1900-1901, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1901. 219 pp.
187. Geographic dictionary of Alaska, by Marcus Baker. 1901. 446 pp. (Out of stock.)
190. Gazetteer of Texas, by Henry Gannett. 1902. 162 pp., 8 pls. (Out of stock.)
192. Gazetteer of Cuba, by Henry Gannett. 1902. 113 pp., 8 pls. (Out of stock.)
194. Northwest boundary of Texas, by Marcus Baker. 1902. 51 pp., 1 pl.
196. Topographic development of the Klamath Mountains, by J. S. Diller. 1902. 69 pp., 13 pls.
197. The origin of certain place names in the United States, by Henry Gannett. 1902. 280 pp. (Out of stock.)
201. Results of primary triangulation and primary traverse, fiscal year 1901-2, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1902. 164 pp., 1 pl.
214. Geographic tables and formulas, compiled by S. S. Gannett. 1903. 284 pp.
216. Results of primary triangulation and primary traverse, fiscal year 1902-3, by S. S. Gannett. 1903. 222 pp., 1 pl.
224. Gazetteer of Texas (second edition), by Henry Gannett. 1904. 177 pp., 7 pls.
226. Boundaries of the United States and of the several States and Territories, with an outline of the history of all important changes of territory (third edition), by Henry Gannett. 1904. 145 pp., 54 pls.
230. Gazetteer of Delaware, by Henry Gannett. 1904. 15 pp.
231. Gazetteer of Maryland, by Henry Gannett. 1904. 84 pp.
232. Gazetteer of Virginia, by Henry Gannett. 1904. 159 pp.

Correspondence should be addressed to

The DIRECTOR,

UNITED STATES GEOLOGICAL SURVEY,

WASHINGTON, D. C.

JUNE, 1904.

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**Author.** ... A gazetteer of Virginia, by Henry Gannett.  
Washington, Gov't print. off., 1904.  
159, III p. 23½<sup>cm</sup>. (U. S. Geological survey. Bulletin no. 232.)  
Subject series: F, Geography, 40.

### Gannett, Henry.

**Subject.** ... A gazetteer of Virginia, by Henry Gannett.  
Washington, Gov't print. off., 1904.  
159, III p. 23½<sup>cm</sup>. (U. S. Geological survey. Bulletin no. 232.)  
Subject series: F, Geography, 40.

### U. S. Geological survey.

**Series.** Bulletins.  
no. 232. Gannett, Henry. A gazetteer of Virginia.  
1904.

### U. S. Dept. of the Interior.

**Reference.** see also  
U. S. Geological survey.



Bulletin No. 233

*J. C. Bann*  
Series F, Geography, 41

DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY  
CHARLES D. WALCOTT, DIRECTOR

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A

# GAZETTEER OF WEST VIRGINIA

BY

HENRY GANNETT



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904



## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., March 9, 1904.*

SIR: I have the honor to transmit herewith, for publication as a  
bulletin, a gazetteer of West Virginia.

Very respectfully,

HENRY GANNETT,  
*Geographer.*

HON. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*



# A GAZETTEER OF WEST VIRGINIA.

By HENRY GANNETT.

## GENERAL DESCRIPTION OF THE STATE.

The State of West Virginia was cut off from Virginia during the civil war and was admitted to the Union on June 19, 1863. As originally constituted it consisted of 48 counties; subsequently, in 1866, it was enlarged by the addition of two counties, Berkeley and Jefferson, which were also detached from Virginia.

The boundaries of the State are in the highest degree irregular. Starting at Potomac River at Harpers Ferry, the line follows the south bank of the Potomac to the Fairfax Stone, which was set to mark the headwaters of the North Branch of Potomac River; from this stone the line runs due north to Mason and Dixon's line, i. e., the southern boundary of Pennsylvania; thence it follows this line west to the southwest corner of that State, in approximate latitude  $39^{\circ} 43\frac{1}{4}'$  and longitude  $80^{\circ} 31'$ , and from that corner north along the western boundary of Pennsylvania until the line intersects Ohio River; from this point the boundary runs southwest down the Ohio, on the northwestern bank, to the mouth of Big Sandy River. The Big Sandy and Tug Fork nearly to its head then form the boundary. Thence the line follows a very irregular course, turning east and northeast, but with frequent breaks in direction as it coincides with the irregular boundaries of the counties which were set off to form the State.

The topographic features of West Virginia are simple. Nearly all the area of the State consists of a greatly dissected plateau which slopes from a crest line near the eastern boundary in a northwesterly direction to Big Sandy and Ohio rivers. Ohio River at the mouth of the Big Sandy, which is the lowest part of the State with the exception of the territory surrounding Harpers Ferry, has an altitude of about 500 feet, and the plateau level along the Ohio is 200 or 300 feet higher. From this level, which may be taken as the base of the plateau, the land rises to the northeast, and along the Allegheny Front has an average altitude of perhaps 4,000 feet. The streams of this plateau have cut deep gorges, and in most parts of it are so numerous that the plateau is reduced to an alternation of sharp ridges and deep, narrow canyons.



The principal rivers are the Ohio, which borders the State on the west and which is navigable throughout the portion bordering the boundary; the Big Sandy, which is navigable for small craft up to the junction of Tug and Levisa forks; the Guyandot; the Kanawha, which is navigable nearly to the falls above Charleston; the Little Kanawha; and the Monongahela. All of these are tributaries of the Ohio, and head in the plateau, with the exception of Kanawha River, the main branch of which, known as New River, heads in northwestern North Carolina and cuts a gorge throughout the entire breadth of the plateau in its course to the Ohio.

The mean altitude of the State above sea level is estimated at 1,500 feet. The areas within certain zones of altitude are as follows:

*Areas in West Virginia at different altitudes.*

	Square miles.
500-1,000 .....	7,900
1,000-1,500 .....	6,000
1,500-2,000 .....	4,200
2,000-3,000 .....	5,280
3,000-4,000 .....	1,200
4,000-5,000 .....	200

The gross area of the State—that is, including all bodies of water as well as land—is 24,780 square miles. The land area, after deducting the river surface, is 24,645 square miles.

The first census of population and industries of the State was taken in 1870. The following table shows the population at that and at each subsequent census, with the rate of increase:

*Census of West Virginia at each census since 1870.*

Year.	Population.	Rate of increase.
		<i>Per cent.</i>
1870.....	442,014	.....
1880.....	618,457	39.9
1890.....	762,794	23.3
1900.....	958,800	25.7

In 1900 the population was essentially of a rural character, as there were only four cities which had more than 8,000 inhabitants each, namely, Wheeling, Huntington, Parkersburg, and Charleston. The combined population of these four cities was only 73,603, or 8 per cent of the total population of the State, while in the United States at large one-third of all the people live in cities of this class.

The average number of persons to a family was 5.1, a number exceeded by Texas only, in which there were 5.2 persons to a family.

Males were largely in excess of females, the proportion being 521 males to 479 females. This condition is unusual in the eastern part of the country, there being no other State east of the Mississippi in which the proportion of males is as large as in West Virginia.

Another unusual feature is represented by the race distribution. Out of every 1,000 persons 955 were white and but 45 colored, while in the District of Columbia and Maryland the proportion of negroes is vastly greater. The proportion of foreign born was also very small; out of 1,000 persons 977 were born in the United States and only 23 in foreign countries. Of all the States of the Union, West Virginia has the largest proportion of native white inhabitants; out of every thousand inhabitants no fewer than 922 were whites born in the United States. There are States having a smaller proportion of foreign blood, but those States, like Mississippi, have a large proportion of negroes.

Persons more than 10 years of age who were unable to read and write comprised 11.4 per cent of all the inhabitants of the State, 10.3 per cent being white inhabitants, and 32.3 per cent being negroes.

Of the whole number of inhabitants of the State over 10 years of age, 46.4 per cent were engaged in gainful occupations. Of this number, nearly one-half, or 46.6 per cent, were engaged in agricultural pursuits, 3.6 per cent in professions, 17.3 per cent in domestic and other personal service, 11.7 per cent in trade and transportation, and 20.8 per cent in manufactures and mining.

Agriculture is the principal industry of the State. In 1900 there were 92,874 farms. Of these, nearly four-fifths, or 78.2 per cent, were owned by their occupiers, the remainder being rented either for a money rental or for a share of the proceeds, the latter plan being the one most in vogue. The total area in farms amounted to 10,654,513 acres. Of this, a little more than half, 5,498,981 acres, was under cultivation; this is 51.6 per cent of the entire farm area and 34.9 per cent, or more than a third, of the whole area of the State. The average size of the farms was 114.7 acres, considerably less than the average of the United States. The total value of the farms, including land, buildings, implements, and live stock—in short, the entire farm capital—was \$203,907,349, an average per farm of \$2,196.

The following table shows the distribution of the value among the different items:

*Value of farm lands, buildings, and accessories in West Virginia.*

Land .....	\$134, 269, 110
Buildings .....	34, 026, 560
Implements .....	5, 040, 420
Live stock .....	30, 571, 259

The farm products had a value of \$44,768,979, an average value per

farm of \$482. This was 22 per cent of the whole amount of farming capital. The following table shows the divisions of live stock and farm products:

*Statistics of live stock and farm products in West Virginia.*

Cattle .....	639, 782	Wheat.....bushels..	4, 326, 150
Horses .....	185, 188	Oats.....do....	1, 833, 840
Mules .....	11, 354	Potatoes.....do....	2, 245, 821
Sheep .....	968, 843	Hay .....	644, 535
Swine .....	442, 844	Tobacco.....pounds..	3, 087, 140
Corn .....	bushels.. 16, 610, 730	Dairy produce.....	\$5, 088, 153

Although primarily a farming State, West Virginia has a considerable number of manufactures and they are rapidly increasing in importance. These manufactures are mainly in the narrow strip in the north lying between Pennsylvania and Ohio River, in and about Wheeling.

The total number of manufacturing establishments in the State was 4,418. They had a capital of \$55,904,238, employed 33,272 hands, and paid \$12,969,237 in wages. Raw materials cost \$43,006,880, and the products had a gross value of \$74,838,330. The following table gives the principal articles of manufacture, with the value of the products:

*Statistics of principal manufactures in West Virginia.*

Steam railway cars .....	\$2, 943, 557
Clay products .....	1, 541, 239
Coke .....	3, 529, 241
Flour.....	5, 541, 353
Foundry products .....	1, 401, 852
Glass .....	1, 871, 795
Iron and steel .....	16, 514, 212
Lumber .....	10, 612, 837
Leather .....	3, 210, 753

In mineral products West Virginia takes high rank, especially in coal, petroleum, and natural gas. The coal produced in 1901 amounted to 24,068,402 short tons, and was exceeded only by Pennsylvania and Illinois. In making coke from its coal it was exceeded by Pennsylvania only, the amount produced being 2,283,700 short tons. Its petroleum production was 14,177,126 barrels, which was exceeded only by Pennsylvania and Ohio. Its natural gas had a value of \$3,954,472. Coal, petroleum, and natural gas are found in various places throughout the State. Indeed, most of the plateau seems to be underlain with coal, and within this area petroleum and natural gas may exist.

Of iron ore Virginia and West Virginia together produced 925,394 long tons, and West Virginia smelted 166,597 long tons.

Originally West Virginia was entirely covered by dense forests. In the higher country these were largely coniferous. In Pocahontas

County, above the crest of the Allegheny Plateau, are found extensive tracts covered with white pine similar to that of New England and the Lake States. Farther down the slopes the hard woods become relatively more abundant, and the coniferous species disappear near Ohio River. In the lower portions of the State, near Ohio River, these forests have been largely cut away to make way for cultivation of the soil and to supply needed lumber, but in the eastern part there are vast tracts still untouched by lumbermen. It is estimated that timber still covers not less than 18,400 square miles, or 73 per cent of the area of the State, and that the State still contains not far from 35,000,000,000 feet B. M. In 1900 the Census reported that a little over half a billion feet were cut for lumber purposes, besides that used for firewood, fence posts, etc.

## GAZETTEER.

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- Aaron**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Aaron**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Aaron**; creek, a left-hand branch of Deckers Creek in Monongalia County.
- Aaron**; fork, a small right-hand branch of Little Sandy Creek, a tributary to Elk River, in Kanawha County.
- Aarons**; post village in Kanawha County.
- Abb Camp**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Abbot**; creek, a right-hand branch of Fifteenmile Fork of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Abbott**; branch, a small left-hand tributary to Big Ugly Creek, a branch of Guyandot River, in Lincoln County.
- Abbott**; post village in Upshur County.
- Aberdeen**; post village in Lewis County.
- Abram**; creek, a right-hand tributary to North Fork of Potomac River in Mineral and Grant counties.
- Absalom**; run, a small left-hand tributary to Right Fork of Steer Creek in Gilmer County.
- Academy**; post village in Pocahontas County.
- Acme**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Acord**; branch, a small left-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Ada**; post village in Mercer County on the Norfolk and Western Railway and on East River. Altitude, 2,225 feet.
- Adairs**; run, a small left-hand tributary to New River in Mercer County.
- Adaline**; post village in Marshall County.
- Adam**; post village in Calhoun County.
- Adamston**; post village in Harrison County.
- Adkin**; post village in Wyoming County.
- Adkin**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Adkins**; branch, a small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Adkins**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Fayette County.
- Adkins**; fork, a small left-hand branch of Rich Creek, a tributary to East Fork of Twelvepole Creek, in Wayne County.
- Adkins**; fork, a very small left-hand tributary to Clear Fork of Guyandot River in Wyoming County.
- Adkins**; fork, a very small left-hand tributary to Spruce Fork of Little Coal River in Logan County.

- Adlai**; post village in Pleasants County.
- Adley**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Adolph**; post village in Randolph County.
- Adonijah**; fork, a left-hand branch of Big Sycamore Creek, a tributary to Elk River, in Clay County.
- Adonis**; post village in Tyler County.
- Advent**; post village in Jackson County.
- Afton**; post village in Preston County.
- Akron**; post village in Tyler County.
- Alam**; village in Greenbrier County on Meadow River.
- Alaska**; post village in Mineral County.
- Alaska**; station in Fayette County on the Chesapeake and Ohio Railway and on New River.
- Albatross**; post village in Putnam County.
- Albert**; post village in Tucker County on the Virginia and Southwestern Railway.
- Albion**; Post village in Nicholas County.
- Albright**; post village in Preston County.
- Alderson**; branch, a very small right-hand tributary to Winding Gulf, a branch of Guyandot River, in Raleigh County.
- Alderson**; county seat of Monroe County on the Chesapeake and Ohio Railway. Altitude, 1,548 feet. Population, 518.
- Aldrich**; branch, a small right-hand tributary to Cranberry River in Webster County.
- Aldrich**; fork, an indirect left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Aleck**; run, a small left-hand tributary to Right Fork of Buckhannon River in Upshur County.
- Alexander**; post village in Upshur County.
- Alfred**; post village in Gilmer County on the Baltimore and Ohio Railroad.
- Algeria**; post village in Pleasants County.
- Algoma**; village in McDowell County, on the Norfolk and Western Railroad.
- Alice**; post village in Gilmer County.
- Alkires Mills**; post village in Lewis County.
- Allegheny Front**; the escarpment of the Allegheny Plateau in Pendleton, Grant, and Mineral counties. Elevation, 2,000 to 4,500 feet.
- Allegheny Plateau**; westernmost member of the Appalachian system, extending as a greatly dissected plateau through southern New York, Pennsylvania, and Maryland, occupying the greater part of West Virginia, and, under the name of Cumberland Plateau, extending across eastern Kentucky and middle Tennessee into northern Alabama.
- Allen**; creek, a small right-hand tributary to Guyandot River in Raleigh and Wyoming counties.
- Allen**; creek, a small left-hand branch of Birch River, a tributary to Elk River, in Webster and Nicholas counties.
- Allen Knob**; summit in Greenbrier County. Altitude, 3,704 feet.
- Allensville**; post village in Berkeley County.
- Alliance**; post village in Harrison County.
- Alma**; post village in Tyler County.
- Alpena**; post village in Randolph County.
- Alpha**; post village in Doddridge County.
- Alta**; post village in Greenbrier County.
- Altizer**; post village in Calhoun County.

- Alton**; post village in Upshur County on the Baltimore and Ohio Railroad. Altitude, 1,813 feet.
- Alum**; creek, a small right-hand tributary to Tug Fork of Big Sandy River in Mingo County.
- Alum**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Alumbridge**; post village in Lewis County.
- Alvaro**; post village in Kanawha County.
- Alvon**; post village in Greenbrier County.
- Alvy**; post village in Tyler County.
- Amblersburg**; post village in Preston County on the Baltimore and Ohio Railroad.
- Amboy**; post village in Preston County.
- Ambrosia**; post village in Mason County on the Ohio Central Lines Railroad.
- Amma**; post village in Roane County.
- Amos**; fork, a small right-hand branch of Old Lick Creek, a tributary to Holly River, in Webster County.
- Amos**; post village in Marion County.
- Amos**; run, a small right-hand branch of Laurel Creek, a tributary to Elk River, in Webster County.
- Amos**; run, a small creek in Webster County.
- Anchor**; post village in Boone County.
- Andy**; post village in Wetzel County.
- Angel**; fork, a small left-hand tributary to Coal River in Kanawha and Putnam counties.
- Angel**; post village in Kanawha County.
- Angerona**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Anglin**; creek, a small right-hand branch of Meadow River, tributary to Gauley River, in Nicholas County.
- Anita**; village in Marion County.
- Ann**; run, a right-hand branch of Simpson Creek in Harrison County.
- Annamoriah**; post village in Calhoun County.
- Ansted**; town in Fayette County on a branch of the Chesapeake and Ohio Railway. Altitude, 1,225 feet. Population, 1,090.
- Anthem**; post village in Wetzel County.
- Anthony**; creek, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.
- Anthony**; creek, a left-hand tributary to Greenbrier River in Greenbrier County.
- Anthony**; post village in Greenbrier County on the Chesapeake and Ohio Railway.
- Antioch**; post village in Mineral County.
- Apgah**; post village in Kanawha County.
- Applegrove**; post village in Mason County on the Baltimore and Ohio Railroad.
- Aracoma**; town in Logan County. Population, 444.
- Arbovale**; post village in Pocahontas County.
- Arbuckle**; creek, a small left-hand tributary to New River in Fayette County.
- Arbuckle**; post village in Mason County on the Ohio Central Lines.
- Arbutus**; post village in Kanawha County.
- Arca**; post village in Wirt County.
- Arches**; post village in Wetzel County.
- Arden**; post village in Barbour County on the Baltimore and Ohio Railroad.
- Arkansas**; branch, a very small right-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Arlee**; post village in Mason County.
- Arlington**; post village in Upshur County on the Norfolk and Western Railway.

- Armour**; creek, a small right-hand tributary to Kanawha River in Kanawha and Putnam counties.
- Armstrong**; creek, a left-hand tributary to Kanawha River in Fayette County.
- Arnettville**; post village in Monongalia County.
- Arnold**; post village in Lewis County on the Baltimore and Ohio Railroad.
- Arnoldsburg**; post village in Calhoun County.
- Arroyo**; post village in Hancock County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway.
- Arthur**; post village in Grant County.
- Arvilla**; post village in Pleasants County.
- Asbury**; post village in Greenbrier County.
- Ash**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha and Fayette counties.
- Ash**; fork, a small right-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas and Clay counties.
- Ash**; post village in Mason County.
- Ashbridge**; branch, a small right-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Ash Camp**; run, a right-hand branch of Long Drain in Wetzel County.
- Ashland**; post village in McDowell County.
- Ashley**; post village in Doddridge County on the Norfolk and Western Railway.
- Ashton**; post village in Mason County on the Baltimore and Ohio Railroad.
- Aspinwall**; post village in Lewis County.
- Assurance**; post village in Monroe County.
- Astor**; post village in Taylor County.
- Athens**; post village in Mercer County.
- Atkinsville**; post village in Raleigh County.
- Atlas**; post village in Upshur County.
- Atwood**; post village in Tyler County.
- Auburn**; post village in Ritchie County.
- Audra**; post village in Barbour County.
- Augusta**; post village in Hampshire County.
- Aurora**; post village in Preston County on the Baltimore and Ohio Railroad.
- Austen**; post village in Preston County on the Baltimore and Ohio Railroad.
- Auvil**; post village in Tucker County.
- Avon**; post village in Doddridge County.
- Avondale**; post village in McDowell County on the Baltimore and Ohio Railroad.
- Ayers**; post village in Calhoun County.
- Back**; creek, a right-hand branch of the Potomac River in Berkeley County.
- Back**; creek, a small right-hand branch of Indian Creek, a tributary to New River, in Monroe County.
- Back**; creek, a small left-hand tributary to Second Creek, a branch of Greenbrier River, in Monroe County.
- Back Allegheny**; mountain at head of Shavers Fork of Cheat River in Randolph, Pocahontas, and Greenbrier counties.
- Backbone Knob**; summit in Logan County.
- Back Fork**; mountain in Webster and Randolph counties.
- Back Fork of Elk**; right-hand branch of Elk River in Webster and Randolph counties.
- Backus**; post village in Fayette County.
- Baden**; post village in Mason County.
- Badway**; branch, a small left-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.



- Bailey**; branch, a very small left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Bailey**; branch, a very small right-hand tributary to Winding Gulf, a branch of Guyandot River, in Raleigh County.
- Bailey**; branch, a very small right-hand tributary to Pocotaligo River, a branch of Kanawha River, in Putnam County.
- Baileysville**; post village in Wyoming County.
- Baker**; fork, a small left-hand branch of Elk Twomile Creek, a tributary to Elk River, in Kanawha County.
- Baker**; fork, a small left-hand tributary to Elk River in Braxton County.
- Baker**; post village in Hardy County on the Norfolk and Western Railway.
- Bakers**; run, a left-hand tributary to Lost River in Hardy County.
- Bakerton**; post village in Jefferson County on the Baltimore and Ohio Railroad.
- Balderson**; post village in Wood County.
- Bald Knob**; summit in Boone County.
- Bald Knob**; summit in Harris County. Elevation, 1,552 feet.
- Bald Knob**; summit in Lewis County.
- Bald Knob**; summit in the eastern part of Pocahontas County on the Virginia State line. Altitude, 4,242 feet.
- Baldknob**; post village in Boone County.
- Baldwin**; branch, a small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Baldwin**; post village in Gilmer County.
- Ball**; creek, a right-hand branch of Tanner Fork of Little Kanawha River in Gilmer County.
- Ball**; creek, a small left-hand branch of Charley Creek, a tributary to Mud River, in Cabell County.
- Ballard**; fork, a small left-hand tributary to Horse Creek, a branch of Little Coal River, in Boone County.
- Ballard**; fork, a small right-hand tributary to Mud River, a branch of Guyandot River, in Boone County.
- Ballard**; post village in Monroe County.
- Ballengee**; post village in Summers County.
- Balls**; post village in Marshall County.
- Balser**; mountain, a summit in Pocahontas County.
- Baltimore**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.
- Bancroft**; post village in Putnam County.
- Bank**; post village in Pendleton County.
- Bank Camp**; branch, a small right-hand tributary to Left Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Bannen**; post village in Marshall County.
- Bannock Shoal**; run, a small right-hand tributary to Williams River in Webster and Pocahontas counties.
- Bans**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Barbecue**; fork, a left-hand branch of Grass Run in Gilmer County.
- Barbecue**; run, a small right-hand branch of Maul Creek in Braxton County.
- Barbour**; county, situated in the northern part of the State, in the Alleghany Plateau, here not greatly dissected; it is drained by tributaries to the Monongahela. Area, 393 square miles. Population, 14,198—white, 13,390; negro, 808; foreign born, 230. County seat, Philippi. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 50 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Baltimore and Ohio Railroad.

**Barboursville**; town in Cabell County on the Chesapeake and Ohio Railway. Altitude, 578 feet. Population, 429.

**Bardane**; post village in Jefferson County.

**Bargers Springs**; post village in Summers County.

**Barker**; creek, a left-hand tributary to Guyandot River in Wyoming County.

**Barker Ridge**; mountains in Wyoming County.

**Barn**; post village in Mercer County.

**Barn**; run, a small left-hand tributary to Right Fork of Steer Creek in Gilmer County.

**Barnes Mills**; post village in Hampshire County.

**Barnett**; run, a right-hand branch of Wheeling Creek in Marshall County.

**Barns Creek**; right-hand branch of Mud River in Lincoln County.

**Barnum**; post village in Mineral County on the West Virginia Central and Pittsburg Railway.

**Barrackville**; post village in Marion County on the Baltimore and Ohio Railroad. Altitude, 901 feet.

**Barren**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Fayette County.

**Barren**; creek, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.

**Barren She**; creek, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Barren She**; mountain, a summit in Nicholas County. Elevation, 3,000 feet.

**Barren She**; run, a small right-hand tributary to North Fork of Cherry River in Nicholas County.

**Barren She**; run, a small left-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.

**Bartholomew**; fork, a left-hand branch of Buffalo Creek in Marion County.

**Bartlett**; creek, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River in McDowell County.

**Bartley**; post village in Wyoming County.

**Barton Knob**; summit of Cheat Mountain in Randolph County.

**Bartram**; post village in Wayne County.

**Basin**; post village in Wyoming County.

**Basnett**; village in Marion County.

**Bat**; run, a left-hand tributary of Fish Creek in Wetzel County.

**Batoff**; creek, a small left-hand branch of Piney Creek, a tributary to New River, in Raleigh County.

**Battern**; fork, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Battle**; run, a right-hand branch of Little Wheeling Creek in Ohio County.

**Bauffman Knob**; summit between Elk and Gauley rivers in Webster County.

**Bayard**; town in Grant County on North Fork of Potomac River and on the West Virginia Central and Pittsburg Railway. Population, 540. Altitude, 3,150 feet.

**Bayards Knob**; summit in Randolph County. Altitude, 4,150 feet.

**Bays**; fork, a small left-hand branch of Middle Fork of Davis Creek, tributary to Kanawha River, in Kanawha County.

**Bays**; post village in Fayette County.

**Beach**; fork, a right-hand branch of Twelvepole Creek in Wayne County.

**Beach Lick**; run, a small right-hand tributary to South Fork of Cherry River in Greenbrier County.

**Bealls Mills**; post village in Lewis County.

**Bean Camp**; creek, a small right-hand branch of Marrowbone Creek, a tributary to Tug Fork of Chattarawha River, in Logan County.

- Bear**; branch, a small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Bear**; branch, a very small right-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Bear**; branch, a very small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Bear**; branch, a small left-hand tributary to Horse Creek, a branch of Little Coal River, in Lincoln County.
- Bear**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Bear**; creek, a left-hand tributary to North Fork of Cherry River in Greenbrier County.
- Bear**; mountain, a summit near the eastern border of Pocahontas County.
- Bear**; run, a small right-hand tributary to Little Birch River in Braxton County.
- Bear**; run, a small left-hand tributary to Elk River in Braxton County.
- Bear**; run, a small left-hand tributary to Little Kanawha River in Gilmer County.
- Bear**; run, a small right-hand tributary to Oil Creek in Lewis County.
- Bear**; run, a right-hand tributary to South Fork of Fishing Creek in Wetzel County.
- Bear Camp**; run, a small left-hand branch of Left Fork of Buckhannon River in Randolph and Upshur counties.
- Beard**; post village in Pocahontas County on the Chesapeake and Ohio Railway.
- Bearden Knob**; summit of Brown Mountain in Tucker County.
- Beards**; fork, a right-hand branch of Loop Creek, a tributary to Kanawha River in Fayette County.
- Bear Garden**; fork, a small right-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Bear Garden Knobs**; summits in Greenbrier County, one of which reaches an altitude of 3,262 feet.
- Bearhole**; fork, a small right-hand tributary to Guyandot River in Wyoming County.
- Bear Knob**; summit in Randolph County.
- Bear Pen**; branch, a small right-hand branch of Rock Camp Fork of Twentymile Creek, a tributary to Gauley River in Nicholas and Clay counties.
- Bear Run**; fork, a small right-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Clay and Nicholas counties.
- Bear Spring**; branch, a small left-hand tributary to Huff Creek, a branch of Guyandot River, in Wyoming County.
- Bearsville**; post village in Tyler County.
- Beartown**; branch, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Beartown**; fork, a small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Beartown Ridge**; mountains in Wyoming County.
- Bearwallow**; branch, a very small right-hand tributary to North Fork of Elkhorn Creek in McDowell County.
- Bear Wallow**; branch, a small right-hand tributary to Dingus Run, a branch of Guyandot River, in Logan County.
- Bear Wallow**; hill in McDowell County. Altitude, 3,170 feet.
- Bear Wallow**; run, a small right-hand tributary to Back Fork of Elk River in Webster and Randolph counties.
- Bear Wallow Knob**; summit in Fayette County. Altitude, 2,460 feet.
- Bear Wallow Knob**; summit in Greenbrier County. Elevation, 4,030 feet.
- Bear Wallow Ridge**; mountains in Wyoming County.
- Beatrice**; post village in Ritchie County.
- Beatysville**; post village in Jackson County.

**Beauty**; post village in Fayette County.

**Beaver**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.

**Beaver**; creek, a small left-hand tributary to Greenbrier River in Pocahontas County.

**Beaver**; creek, a small right-hand tributary to Meadow River in Greenbrier County.

**Beaver**; creek, a right-hand branch of Black Water River in Tucker County.

**Beaver**; creek, a right-hand tributary to Piney Creek, a branch of New River, in Raleigh County.

**Beaver**; creek, a small right-hand tributary to Valley River in Randolph and Barbour counties.

**Beaver**; creek, a small left-hand tributary to Valley River in Randolph County.

**Beaver**; post village in Nicholas County on the Chesapeake and Ohio Railway.

**Beaver**; run, a small right-hand tributary to Holly River in Webster County.

**Beaver**; run, a small right-hand tributary to Patterson Creek, a branch of North Branch of Potomac River, in Mineral County.

**Beaver**; run, a small right-hand tributary to Gauley River in Webster County.

**Beaver Dam Ridge**; short spur of Black Mountain in Pocahontas County.

**Beaver Lick**; mountain, long narrow ridge, lying east of Greenbrier River in Greenbrier and Pocahontas counties. Elevation, 2,500 to 3,500 feet.

**Beaver Pond**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.

**Bebee**; post village in Wetzel County.

**Beccas**; creek, a small right-hand tributary to Valley River in Randolph County.

**Beckley**; county seat of Raleigh County. Population, 342. Altitude, 2,300 feet.

**Beckwith**; post village in Fayette County on Laurel Creek.

**Becky**; run, a small left-hand tributary to South Fork of Cherry River in Greenbrier County.

**Bedington**; post village in Berkeley County on the Cumberland Valley Railroad.

**Bee**; branch, a very small left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.

**Bee**; branch, a very small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.

**Bee**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Bee**; branch, a small right-hand tributary to Sand Lick Creek, a branch of Marsh Fork of Coal River, in Raleigh County.

**Bee**; run, a small left-hand tributary to Cranberry River in Webster and Nicholas counties.

**Bee**; run, a very small right-hand tributary to Elk River in Braxton County.

**Bee**; run, a left-hand branch of Cheat River in Preston County.

**Bee**; post village in Putnam County.

**Beech**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.

**Beech**; branch, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan and Wyoming counties.

**Beech**; creek, a small right-hand branch of Tug Fork of Chattarawha River, a tributary to Ohio River, in Logan County.

**Beech**; creek, a small left-hand branch of Spruce Fork of Little Coal River in Logan County.

**Beech**; fork, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas and Webster counties.

**Beech**; fork, a right-hand branch of Shaver Fork in Braxton County.

- Beech**; fork, a large right-hand tributary to Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Beech**; fork, a small right-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Clay and Nicholas counties.
- Beech**; mountain, a short spur from Rich Mountain in Randolph and Nicholas counties.
- Beech**; post village in Calhoun County.
- Beech**; run, a small left-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Beech**; run, a right-hand head fork of Left Fork of Buchannon River in Randolph County.
- Beechcreek**; post village in Mingo County on the Norfolk and Western Railway. Altitude, 1,019 feet.
- Beech Flat Knob**; summit in Randolph County.
- Beechgrove**; post village in Ritchie County on the Baltimore and Ohio Railroad.
- Beechhill**; post village in Mason County.
- Beech Knob**; summit in Greenbrier County. Altitude, 4,161 feet.
- Beech Lick**; run, a right-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Beechwood**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Beechy**; branch, a small left-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Beechy**; fork, a small left-hand branch of Fuqua Creek, a tributary to Coal River, in Lincoln County.
- Bee Knob**; summit in Braxton County.
- Bee Knob**; summit in Greenbrier County.
- Bee Knob**; summit in Randolph County.
- Bee Knob**; summit in Webster County. Altitude, 3,280 feet.
- Beelers Station**; post village in Marshall County.
- Bee Lick Knob**; summit in Fayette County. Altitude, 3,118 feet.
- Bee Tree**; branch, a small left-hand tributary to Devils Fork, a branch of Guyan-dot River, in Raleigh County.
- Bee Tree**; run, a small left-hand tributary to Back Fork of Elk River in Randolph County.
- Bee Tree Ridge**; short spur from Frank Mountain in Pocahontas County.
- Behler**; post village in Monongalia County.
- Belcher**; branch, a very small right-hand tributary to Tug River in McDowell County.
- Belcher**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Belcher**; branch, a small left-hand tributary to Pinnacle Creek, a branch of Guyan-dot River, in Wyoming County.
- Belfont**; post village in Braxton County.
- Belgrove**; post village in Jackson County.
- Belington**; town in Barbour County on the Baltimore and Ohio, the Belington and Beaver Creek, the Roaring Creek and Belington, and the West Virginia Central and Pittsburg railroads. Population, 430.
- Bell**; creek, a right-hand branch of Twenty Mile Creek, a tributary to Gauley River, in Nicholas, Fayette, and Kanawha counties.
- Belle**; post village in Kanawha County.
- Belleville**; post village in Wood County on the Baltimore and Ohio Railroad.
- Bellton**; post village in Marshall County on the Baltimore and Ohio Railroad.
- Belmont**; post village in Pleasants County on the Baltimore and Ohio Railroad.

- Belva**; post village in Nicholas County on the Chesapeake and Ohio Railway.
- Ben**; creek, a small right-hand branch of Tug Fork of Big Sandy River in Mingo County.
- Ben**; run, a small left-hand tributary to Indian Fork in Lewis County.
- Ben**; run, a small left-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Ben**; run, a small right-hand tributary to Elk River in Braxton County.
- Bend**; branch, a very small right-hand tributary to Spruce Fork of Little Coal River in Logan County.
- Bend**; branch, a small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.
- Bender**; run, a small left-hand tributary to left fork of Steer Creek in Braxton County.
- Bendolph**; village in Marion County.
- Ben Lomond**; post village in Mason County on the Baltimore and Ohio Railroad.
- Bennett**; fork, a small indirect right-hand tributary to Pond Fork of Little Coal River, a branch of Coal River, in Boone County.
- Bennett**; post village in Gilmer County.
- Benson**; post village in Harrison County.
- Bent**; creek, a very small left-hand branch of Marrowbone Creek, a tributary to Tug Fork of Chattoahwa River, in Logan County.
- Bent Mountain**; ridge in Mercer County.
- Bentons Ferry**; post village in Marion County on the Baltimore and Ohio Railroad. Altitude, 883 feet.
- Benwood**; city in Marshall County, on the Baltimore and Ohio and the Pittsburg, Cincinnati, Chicago and St. Louis railroads. Altitude, 645 feet. Population, 4,511.
- Berea**; post village in Ritchie County.
- Bergoo**; fork, a left-hand tributary to Elk River in Webster and Randolph counties.
- Bergoo**; post village in Webster County.
- Berkeley**; county situated in the northeastern part of the State, limited on the north by the Potomac; the surface consists in the main of a rolling valley traversed by Little North and Sleepy Creek mountains. Area, 257 square miles. Population, 19,469—white, 17,704; negro, 1,765; foreign born, 237. County seat, Martinsburg. The mean magnetic declination in 1900 was 4° 25'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio and the Cumberland Valley railroads.
- Berkeley**; run, a left-hand branch of Tygart Valley River in Taylor County.
- Berkeley Springs**; county seat of Morgan County on the Baltimore and Ohio Railroad. Population, 781.
- Berlin**; post village in Lewis County.
- Bernards Town**; post village in Webster County.
- Bernie**; post village in Lincoln County.
- Berry**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Berry**; branch, a small left-hand tributary to Winding Gulf, a branch of Guyandot River in Raleigh County.
- Berry**; run, a left-hand tributary of Berkeley Run in Taylor County.
- Berryburg**; post village in Barbour County on the Baltimore and Ohio Railroad.
- Bert**; post village in Tyler County.
- Bethany**; village in Brooke County. Population, 245.
- Bethel**; post village in Mercer County.
- Betsy**; run, a right-hand branch of North Fork of Fishing Creek in Wetzel County.
- Beury**; post village in Fayette County on the Chesapeake and Ohio Railway.

- Beverage Knob**; summit in Upshur County.
- Beverly**; town in Randolph County on the West Virginia Central and Pittsburg Railway. Altitude, 2,250 feet. Population, 464.
- Bias**; branch, a very small right-hand tributary to Spruce Fork of Little Coal River in Boone County.
- Bible Knob**; summit in Pendleton County.
- Bicketts Knob**; summit in Monroe County. Altitude, 3,327 feet.
- Bickle Knob**; summit in Randolph County. Altitude, 4,020 feet.
- Big**; branch, a small right-hand tributary to Cranberry River in Webster County.
- Big**; branch, a very small right-hand branch of West Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Big**; branch, a very small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Big**; branch, a small right-hand tributary to Wide Mouth Creek, a branch of Blue-stone River, in Mercer County.
- Big**; branch, a very small right-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Big**; branch, a very small right-hand tributary to Guyandot River in Mingo County.
- Big**; branch, a small left-hand tributary to Spruce Fork of Little Coal River in Boone County.
- Big**; branch, a very small left-hand tributary to Middle Fork of Mud River, a branch of Guyandot River in Lincoln County.
- Big**; branch, a small left-hand tributary to Lilly Fork of Buffalo Creek, a branch of Elk River, in Clay County.
- Big**; branch, a small left-hand tributary to Second Creek, a branch of Greenbrier River, in Monroe County.
- Big**; branch, a small left-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Big**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.
- Big**; creek, a small left-hand branch of Big Hart Creek, a tributary to Guyandot River, in Lincoln County.
- Big**; creek, a very small left-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Big**; creek, a left-hand branch of Trace Fork of Mud River in Lincoln and Putnam counties.
- Big**; creek, a left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Big**; creek, a very small right-hand tributary to Greenbrier River in Summers County.
- Big**; creek, a small right-hand branch of Guyandot River, a tributary to Ohio River, in Logan County.
- Big**; creek, an indirect right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Big**; creek, a small right-hand tributary to Gauley River, a branch of Kanawha River, in Fayette County.
- Big**; fork, a left-hand branch of Strange Creek in Braxton County.
- Big**; fork, a very small left-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.
- Big**; mountain, a short ridge between Laurel Creek and Little Laurel Creek in Nicholas County.
- Big**; mountain, a ridge west of South Branch of Potomac River in Pendleton County. Elevation, 2,000 to 2,500 feet.
- Big**; run, a left-hand tributary to North Fork of Potomac River in Pendleton County.

- Big**; run, a small left-hand tributary to Elk River in Webster and Randolph counties.
- Big**; run, a small indirect left-hand tributary to West Fork of Monongahela River in Lewis County.
- Big**; run, a small left-hand tributary to Buckhannon River in Upshur County.
- Big**; run, a left-hand tributary to Thorn Run, a branch of South Branch of Potomac River, in Pendleton County.
- Big**; run, a small left-hand tributary to Red Creek in Randolph County.
- Big**; run, a small left-hand tributary to Gauley River, entering it between Miller Ridge and Hamrick Ridge, in Webster County.
- Big**; run, a small left-hand tributary to Elk River in Webster County.
- Big**; run, a small left-hand tributary to Dry Fork of Cheat River in Tucker County.
- Big**; run, a small left-hand tributary to Spruce Run, a small branch of Cheat River, in Preston County.
- Big**; run, a small right-hand tributary to Shavers Fork of Cheat River in southeastern part of Randolph County.
- Big**; run, a small right-hand tributary to East Fork of Greenbrier River in Pocahontas County.
- Big**; run, a small right-hand branch of Laurel Fork, a tributary to Back Fork of Holly River, in Webster County.
- Big**; run, a right-hand tributary to North Fork of Fishing Creek in Wetzel County.
- Big**; run, a small right-hand tributary to Elk River in Webster County.
- Big**; run, a left-hand branch of Little Kanawha River in Gilmer County.
- Big**; run, a small right-hand tributary to Valley River in Randolph County.
- Big**; run, a left-hand branch of Pyles Creek in Marion County.
- Big**; run, a left-hand branch of Leading Creek in Gilmer County.
- Big**; run, a small right-hand tributary to South Branch of Potomac River in Hampshire County.
- Big**; run, a small right-hand tributary to Elk River in Braxton County.
- Bigbottle**; post village in Doddridge County.
- Big Beechy**; creek, a very small left-hand tributary to Elk River in Clay County.
- Big Beechy**; run, a small left-hand tributary to Williams River in Webster County.
- Bigbend**; post village in Calhoun County on the Chesapeake and Ohio Railway.
- Big Briery Knob**; summit in Nicholas County. Altitude, 3,738 feet.
- Big Buffalo**; creek, a small left-hand tributary to Elk River in Braxton County.
- Big Buffalo**; creek, a left-hand tributary to Cheat River in Preston County.
- Big Clear**; creek, a right-hand branch of Meadow River in Greenbrier County.
- Big Clear**; mountain, a curved range in Greenbrier County. Elevation, 3,000 to 4,000 feet.
- Big Clear Creek**; village in Greenbrier County.
- Big Coal**; river, a large, left-hand branch of Kanawha River.
- Big Cove**; run, a small right-hand tributary to Valley River in Barbour County.
- Big Cub**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Big Cub**; creek, a small right-hand tributary to Guyandot River in Wyoming County.
- Big Ditch**; run, a small right-hand tributary to Gauley River in Webster County.
- Big Draft**; small right-hand tributary to Anthonys Creek, a branch of Greenbrier River, in Greenbrier County.
- Big Elk**; run, a small left-hand tributary to Coal River, a branch of Kanawha River, in Raleigh County.
- Big Hart**; creek, a small left-hand branch of Guyandot River, a tributary to Ohio River, in Lincoln County.
- Big Hollow**; short right-hand tributary to Kanawha River in Kanawha County.



- Big Huff**; creek, a right-hand branch of Guyandotte River in Logan and Wyoming counties.
- Big Isaac**; post village in Doddridge County.
- Big Jarrell**; fork, a left-hand branch of Hopkins Fork, a tributary to Coal River, in Boone County.
- Big Jenny**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Big Jonathan**; run, a small left-hand tributary to Cheat River in Tucker County.
- Big Knob**; summit in Clay County.
- Big Knob**; summit in Greenbrier County.
- Big Knob**; summit in Kanawha County. Altitude, 1,487 feet.
- Big Laurel**; branch, a small right-hand tributary to Beaver Creek, a branch of Piney Creek, in Raleigh County.
- Big Laurel**; creek, a small left-hand tributary to Gauley River in Webster County.
- Big Laurel**; creek, a left-hand tributary to Cherry River, a branch of Gauley River, in Nicholas and Greenbrier counties.
- Big Laurel**; creek, a small right-hand branch of Kiah Fork of Twelvepole Creek in Wayne County.
- Big Laurel**; creek, a right-hand tributary to Elk River, a branch of Kanawha River, in Clay County.
- Big Laurel**; run, a left-hand tributary to Valley River in Randolph County.
- Big Laurel**; run, a small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Biglick**; branch, a very small left-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.
- Big Lynn**; creek, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Big Moses**; post village in Tyler County.
- Big Otter**; post village in Clay County.
- Big Paw Paw**; creek, left-hand branch of Monongahela River, in Mineral County.
- Big Ridge**; mountains in Raleigh County.
- Big Ridge**; broken mountainous range in Greenbrier County. Elevation, 2,500 to 3,000 feet.
- Big Ridge**; mountains in Wyoming County.
- Big Ridge**; short spur in Pocahontas County. Elevation, 2,500 to 3,000 feet.
- Big Ridge**; short spur in Hardy County. Elevation, 2,000 feet.
- Big Bight**; fork, a small left-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Big Rock**; summit in Fayette County. Altitude, 2,538 feet.
- Big Rock**; summit in Peters Mountain in Monroe County.
- Big Rocky**; run, a small right-hand tributary to South Fork of Cherry River in Greenbrier County.
- Big Run**; gap in hills in Webster County.
- Big Sandy**; creek, a right-hand tributary to Elk River, a large branch of Kanawha River, in Kanawha County.
- Big Sandy**; post village in McDowell County.
- Big Sandy**; river, a large left-hand branch of Ohio River. It turns in the crest of the Alleghany Plateau and flows nearly northwest to its mouth at Catlettsburg, forming through most of its course the boundary line between West Virginia and Kentucky. Drainage area, 4,050 square miles. It is navigable the entire length. Sometimes called the Chatterawha.
- Big Sang Kill**; very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Logan County.
- Big Sewell**; knob of Big Sewell Mountain in Fayette County.

- Big Sewell**; mountain, a short, curved ridge in Fayette County. Elevation, 3,000 to 3,500 feet.
- Big Spring**; fork, a right-hand head fork of Elk River in Pocahontas County.
- Bigsprings**; post village in Calhoun County.
- Big Spruce Knob**; summit in Pocahontas County. Altitude, 4,652 feet.
- Big Staunch**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Big Sulphur**; creek, a small right-hand branch of Big Ugly Creek, a tributary to Guyandot River, in Lincoln County.
- Big Sycamore**; creek, a left-hand tributary to Elk River in Clay County.
- Big Top**; summit in the central part of Pocahontas County.
- Big Twomile**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Big Ugly**; creek, a right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln and Boone counties.
- Big Whitestick**; creek, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Big Wolf Knob**; summit on boundary line between Lincoln and Logan counties.
- Bill**; branch, a very small right-hand tributary to Guyandot River in Wyoming and Logan counties.
- Bill**; creek, a small left-hand tributary to Kanawha River in Putnam County.
- Bill**; fork, a small right-hand tributary to O'Brien Fork in Braxton County.
- Billie**; branch, a very small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Bills**; creek, a small left-hand tributary to Sugar Creek, an indirect tributary to Valley River, in Barbour County.
- Billy**; branch, a very small right-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Billy**; branch, a very small right-hand tributary to Middle Fork of Mud River in Lincoln County.
- Binola**; post village in Wood County.
- Birch**; fork, a right-hand tributary to Marsh Fork, a left-hand head fork of Coal River, in Raleigh County.
- Birch**; river, a left-hand branch of Elk River in Braxton and Nicholas counties.
- Birch Pen**; run, a small right-hand tributary to Laurel Fork of Holly River in Webster County.
- Birch River**; post village in Nicholas County.
- Birch Root**; run, a small left-hand branch of Big Buffalo Creek in Preston County.
- Bird**; post village in Tyler County.
- Bird**; run, a small left-hand tributary to Knapp Creek, a branch of Greenbrier River, in Pocahontas County.
- Bird Knob**; summit in Clay County. Altitude, 1,880 feet.
- Biahop**; branch, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Bishop Knob**; summit in Webster County.
- Bismarck**; post village in Grant County, situated along the Alleghany Front. Altitude, 2,863 feet.
- Black**; fork, a small left-hand branch of Cabin Creek, a tributary to Guyandot River, in Wyoming County.
- Black**; mountain, a summit in Pocahontas County.
- Black**; run, a right-hand head fork of Laurel Fork of Cheat River in Randolph County.
- Black**; run, a small right-hand tributary to North Fork of Greenbrier River in Pocahontas County.

- Blackbird Knob**; summit in Tucker County.
- Blackburn**; branch, a small right-hand tributary to Sand Lick Creek, a branch of Marsh Fork of Coal River, in Raleigh County.
- Black Lick**; creek, a small right-hand tributary to Bluestone River in Mercer County.
- Black Lick**; creek, a small right-hand tributary to Little Skin Creek in Lewis County.
- Black Oak**; mountain in Mercer County.
- Blacksville**; town in Monongalia on the Chesapeake and Ohio Railway. Population, 180.
- Black Water**; river, a right-hand branch of Dry Fork of Cheat River in Tucker County.
- Blaine**; island in Kanawha River, near Charleston in Kanawha County.
- Blaine**; post village in Mineral County on the West Virginia Central and Pittsburg Railway. Altitude, 1,689 feet.
- Blake**; branch, a left-hand branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.
- Blake**; creek, a small right-hand tributary to Kanawha River in Putnam and Kanawha counties.
- Blake**; fork, a left-hand branch of Lynn Camp Run in Wetzel County.
- Blaker Mills**; post village in Greenbrier County.
- Bland**; run, a right-hand branch of Church Fork of Fish Creek in Wetzel County.
- Blandville**; post village in Doddridge County.
- Blayne**; run, a left-hand tributary of Castleman Run in Ohio County.
- Blaze**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Raleigh and Fayette counties.
- Blaze**; fork, a small left-hand tributary to the right-hand head fork of Grassy Creek in Webster County.
- Blenn**; run, a left-hand branch of Little Fishing Creek in Wetzel County.
- Blennerhassett**; post village in Wood County on the Baltimore and Ohio Railroad.
- Bletcher**; branch, a left-hand branch of Mud River in Cabell County.
- Blizzard**; run, a small right-hand tributary to South Fork of Cherry River in Greenbrier County.
- Bloomery**; post village in Hampshire County. Altitude, 700 feet.
- Bloomington**; post village in Roane County.
- Blown Timber**; fork, a right-hand tributary to Crooked Fork in Braxton County.
- Blue**; creek, a left-hand tributary to Elk River in Kanawha and Clay counties.
- Blue**; post village in Tyler County.
- Bluecreek**; post village in Kanawha County on the Charleston, Clendennin and Sutton Railroad.
- Bluefield**; city in Mercer County on the Norfolk and Western Railway. Altitude, 2,557 feet. Population, 4,644.
- Blue Knob**; branch, a small left-hand tributary to South Fork of Cherry River in Greenbrier County.
- Blue Knob**; creek, a small right-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Blue Knob**; summit in Greenbrier County.
- Blue Knob**; summit in Lincoln County.
- Blue Knob**; summit in Pocahontas County. Altitude, 4,368 feet.
- Blue Knob**; summit in Randolph County.
- Blue Ridge**; mountains, the easternmost ridge of the Appalachian System, with the exception of a few short outliers. It extends from Maryland, southward to the southern boundary of the State. From Harpers Ferry, where it is cut through by the Potomac in a water gap, and where it has an altitude of from

- 1,000 to 1,200 feet, it runs southwestward, increasing rapidly in altitude until at Stony Man, near Luray, and the Peaks of Otter, near Lynchburg, it has an altitude of 4,000 feet. James and Roanoke rivers, which head in the valley behind the ridge, have cut deep gaps in it. In the southern part of the State it changes from a ridge to a plateau with an escarpment facing southeast, and in this form enters North Carolina.
- Blue Spring**; post village in Randolph County.
- Bluestone**; river, a left-hand branch of New River.
- Blue Sulphur Springs**; post village in Greenbrier County on the Chesapeake and Ohio Railway. Altitude, 598 feet.
- Bluff**; fork, a small left-hand branch of Devils Fork, a tributary to Guyandot River, in Raleigh County.
- Bluff**; post village in Mercer County.
- Blundon**; post village in Kanawha County.
- Board**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Board**; post village in Mason County.
- Board Tree**; branch, a very small left-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.
- Board Tree**; branch, a small right-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Board Tree**; gap in Nicholas County, caused by Board Tree Branch in Nicholas County.
- Board Tree**; post village in Marshall County on the Baltimore and Ohio Railroad.
- Boar Knob**; summit in Braxton County. Elevation, 1,466 feet.
- Boaz**; post village in Wood County.
- Bob**; run, a small left-hand tributary to Elk River in Webster County.
- Bobby**; creek, a small right-hand branch of Big Ugly Creek, a tributary to Guyandot River, in Lincoln County.
- Bob Peak**; summit in the central part of Upshur County.
- Bob Ross**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Bobs Ridge**; short spur between Greenbrier and Alleghany mountains in Greenbrier County. Elevation, 2,000 to 2,500 feet.
- Boggs**; fork, a small left-hand tributary to Lower Sleith Fork in Braxton County.
- Boggs**; post village in Webster County on the Baltimore and Ohio Railroad.
- Boggs**; run, a left-hand tributary to Spring Creek, a branch of Greenbrier River, in Greenbrier County.
- Boggs**; run, a left-hand branch of Ohio River in Marshall County.
- Boggs Knob**; summit in Greenbrier County.
- Boggs Knob**; summit in Fayette County. Altitude, 3,600 feet.
- Bois**; post village in Webster County.
- Bolair**; post village in Webster County.
- Bolivar**; town in Jefferson County. Population, 781.
- Bond**; creek, a small left-hand tributary to Ohio River in Ritchie County.
- Bone Town**; gap at mouth of Robinson Creek at its junction with Buffalo Creek, in Clay County.
- Booher**; post village in Tyler County.
- Boomer**; branch, a very small right-hand tributary to Kanawha River, in Fayette County.
- Boomer**; post village in Fayette County on the Ohio Central Lines.
- Boone**; county, situated in the southern part of the State, on the Allegheny Plateau. It is here deeply dissected. It is drained by Coal and Little Coal rivers. Area, 512 square miles. Population, 8,194—white, 8,059; negro, 135; foreign born, 7.

County seat, Madison. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°.

**Boone**; post village in Fayette County.

**Booths**; creek, a right-hand branch of West Fork River in Marion County.

**Boothsville**; post village in Marion County.

**Booton**; branch, a small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Booton**; creek, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Boreman**; post village in Wood County.

**Borland**; post village in Pleasants County.

**Botkins Ridge**; spur in Pendleton County.

**Bottom**; creek, a small right-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River in McDowell County.

**Bowen**; creek, a right-hand branch of Beech Fork of Twelvepole Creek in Wayne County.

**Bowen**; post village in Wayne County.

**Bowers**; creek, a small right-hand branch of Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Bowlby**; post village in Monongalia County.

**Box**; post village in Pendleton County.

**Boyd**; branch, a very small left-hand tributary to Clear Fork of Coal River in Raleigh County.

**Boyd**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.

**Boyer**; fork, a small right-hand branch of Piney Creek, a tributary to New River, in Raleigh County.

**Boyer**; post village in Pocahontas County.

**Boyer**; run, a small right-hand tributary to Cedar Creek in Braxton County.

**Brackin**; creek, a small left-hand branch of Meadow River, a tributary to Gauley River, in Fayette County.

**Bradford**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.

**Bradford**; post village in Randolph County.

**Bradshaw**; creek, a left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River in McDowell County.

**Bradshaw**; creek, a small right-hand branch of Indian Creek, a tributary to New River, in Summers County.

**Bradshaw**; post village in McDowell County, situated on Bradshaw Creek.

**Bradshaw Hill**; a knob of Gauley Mountain in Randolph County.

**Brady**; fork, a left-hand branch of Grass Lick and tributary to Left Fork of Steer Creek in Braxton County.

**Brady**; post village in Pocahontas County.

**Bragg**; branch, a small right-hand tributary to Tommy Creek, a head fork of Guyandot River, in Raleigh County.

**Bragg**; fork, a small right-hand branch of Horse Creek, a tributary to Little Coal River, in Boone County.

**Bragg Knob**; summit in Clay County. Elevation, 1,674 feet.

**Braines**; creek, a right-hand branch of Raccoon Creek, a tributary to Valley River, in Preston County.

**Brake**; run, a small right-hand tributary to South Fork of Potomac River in Hardy County.

**Bramwell**; town in Mercer County on the Norfolk and Western Railway and on Bluestone River. Altitude, 2,247 feet. Population, 825.

**Branch**; mountain, a short ridge in Hardy County. Elevation, 1,500 to 2,500 feet.

**Branch**; post village in Pendleton County.

**Brandonville**; town in Preston County. Population, 68.

**Brandywine**; post village in Pendleton County.

**Brant**; creek, a very small right-hand tributary to Peters Creek, a branch of Gauley River, in Nicholas County.

**Braxton**; county, situated in the central part of the State on the Allegheny Plateau. It is here deeply dissected. It is traversed and drained by Little Kanawha and Elk rivers. Area, 541 square miles. Population, 18,904—white, 18,717; negro, 187; foreign born, 53. County seat, Sutton. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.

**Breeding**; post village in Mingo County.

**Breckenridge**; creek, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.

**Breeden**; creek, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Logan County.

**Bridge**; branch, a very small right-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.

**Bridgeport**; town in Harrison County on the Baltimore and Ohio Railroad. Altitude, 979 feet. Population, 464.

**Brier**; creek, a left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.

**Brier**; creek, a right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.

**Brier**; post village in Wyoming County.

**Brier Patch**; mountain, a peak in the Allegheny Mountains in Randolph County. Altitude, 4,480 feet.

**Briery**; run, a small right-hand tributary to South Fork of Cherry River in Greenbrier County.

**Briery Knob**; summit in Nicholas County. Altitude, 1,850 feet.

**Briery Knob**; summit in Pocahontas County. Elevation, 4,534 feet.

**Brierylick**; run, a right-hand tributary of Right Fork of Steer Creek in Gilmer County.

**Briery Ridge**; short spur in Webster County, north of Gauley River.

**Brighton**; post village in Mason County.

**Brillian**; post village in Putnam County.

**Brink**; post village in Marion County.

**Briscoe**; post village in Wood County.

**Bristol**; post village in Harrison County on the Baltimore and Ohio Railroad.

**Brittain**; post village in Taylor County.

**Broad**; branch, a small left-hand tributary to Big Ugly Creek, a branch of Guyandot River, in Lincoln County.

**Broad**; run, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.

**Broad**; run, a small right-hand branch of Wolf Creek, a tributary to Greenbrier River, in Monroe County.

**Brook**; run, a small right-hand branch of Holly River, a tributary to Elk River, in Braxton County.

**Brook**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.

- Brook**; creek, a left-hand tributary to Laurel Creek in Webster County.
- Brook**; run, a small right-hand tributary to Middle Fork of Tygarts Valley River in Randolph County.
- Brooke**; county, situated in the northern part of the State, in the Panhandle, bordering on Ohio River. Area, 97 square miles. Population, 7,219—white, 7,079; negro, 139, foreign born, 335. County seat, Wellsburg. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Pittsburg, Cincinnati, Chicago and St. Louis Railway.
- Brooklin**; town in Raleigh County on the Chesapeake and Ohio Railway. Population, 632.
- Brooks**; branch, a very small right-hand tributary to New River in Summers County.
- Brooks**; post village in Summers County on the Chesapeake and Ohio Railway.
- Brooks**; run, a very small left-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Brookside**; post village in Preston County.
- Broom**; branch, a small left-hand branch of Alum Creek, a tributary to Coal River, in Kanawha County.
- Broomfield**; post village in Marion County.
- Brosius**; post village in Morgan County.
- Brown**; creek, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Brown**; creek, a small right-hand tributary to Big Clear Creek, a branch of Meadow River, in Greenbrier County.
- Brown**; mountain, a broken mountainous country in Tucker County. Elevation, 3,500 feet.
- Brown**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Brown**; run, a left-hand tributary to North Fork of Dunkard Creek in Monongalia County.
- Brown**; run, a right-hand branch of Fish Creek in Wetzel County.
- Browning**; fork, a left-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.
- Browns**; branch, a very small right-hand branch of Indian Creek, a tributary to New River, in Monroe County.
- Browns**; branch, a small right-hand tributary to West Fork, a branch of Pond Fork of Little Coal River, in Boone County.
- Browns**; creek, a small right-hand branch of Knapp Creek, a tributary to Greenbrier River, in Pocahontas County.
- Browns**; creek, a left-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Browns**; knob in Taylor County.
- Browns**; mountain, a ridge in Pocahontas County between Browns and Knapp creeks. Elevation, 2,500 to 3,000 feet.
- Browns**; run, a left-hand tributary to the Ohio River in Marshall County.
- Browns**; run, a right-hand tributary to Little Wheeling Creek in Ohio County.
- Bruce**; village in Nicholas County.
- Bruceton Mills**; town in Preston County. Population, 80.
- Bruffs**; fork, a head fork of Big Sandy Creek in Preston and Barbour counties.
- Brush**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.
- Brush**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Brush;** creek, a right-hand tributary to Bluestone River in Mercer County. It rises in Stony Ridge.

**Brush;** creek, a small right-hand tributary to New River in Monroe County.

**Brush;** fork, a small left-hand tributary to Buckhannon River in Upshur County.

**Brush;** fork, a small left-hand tributary to Cedar Creek in Gilmer and Braxton counties.

**Brush;** run, a very small right-hand branch of Cedar Creek in Braxton County.

**Brush;** run, a right-hand branch of Indian Fork in Lewis County.

**Brush;** run, a right-hand branch of Lost Run in Taylor County.

**Brush;** run, a left-hand branch of Pyles Fork of Buffalo Creek in Marion County.

**Brush;** run, a right-hand branch of Buffalo Creek in Marion County.

**Brush;** run, a left-hand branch of Fishing Creek in Wetzel County.

**Brush Camp Low Place;** gap at the head of Leatherwood Fork, a left-hand branch of Elk River, in Randolph County.

**Brush Fence;** run, a small right-hand tributary to Gauley River in Webster County.

**Brushfork;** post village in Mercer County.

**Brushy;** branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.

**Brushy;** branch, a very small left-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.

**Brushy;** creek, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Brushy;** creek, a small right-hand tributary to Seneca, a branch of North Fork of Potomac River, in Pendleton County.

**Brushy;** fork, a small left-hand branch of Huff Creek, a tributary to Guyandot River, in Wyoming County.

**Brushy;** fork, a small left-hand branch of Peters Cave Fork of Horse Creek, a tributary to Little Coal River, in Lincoln County.

**Brushy;** fork, a left-hand tributary to Strange Creek in Nicholas County.

**Brushy;** fork, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.

**Brushy;** fork, a small right-hand tributary to Teter Creek, a branch of Valley River, in Barbour County. It rises in Laurel Hills.

**Brushy;** fork, a small right-hand tributary to Bluestone River in Mercer County.

**Brushy;** fork, a small right-hand tributary to Elk River in Braxton County.

**Brushy;** fork, a right-hand branch of Dunkard Creek in Monongalia County.

**Brushy;** fork, a small right-hand tributary to Spruce Fork of Little Coal River in Logan County.

**Brushy;** mountain, a short ridge in Greenbrier and Pocahontas counties. Elevation, 3,000 feet.

**Brushy;** run, a left-hand branch of Lunice Creek, tributary to South Branch of Potomac River, in Grant County.

**Brushy;** run, a name applied to the upper course of North Mill Creek, a right-hand tributary to South Branch of Potomac River, in Pendleton and Grant counties.

**Brushy Flat;** spur from Big Knob in Greenbrier County.

**Brushfork;** post village in Mercer County.

**Brushy Knob;** summit in Lincoln County.

**Brushy Knobs;** summit in Preston County.

**Brushy Meadow;** creek, an indirect right-hand tributary to Gauley River in Nicholas and Greenbrier counties.

**Brushy Ridge;** short, narrow range in Greenbrier County. Elevation, 2,500 feet.

**Brushyrun;** post village in Pendleton County.



- Bryan**; post village in Mason County.
- Buck**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Buck**; fork, a small left-hand branch of Big Hart Creek, a tributary to Guyandot River, in Logan County.
- Buck**; fork, a right-hand head fork of Sand Creek, a tributary to Guyandot River, in Lincoln County.
- Buck**; fork, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Buck**; mountain, a short ridge in Hardy County.
- Buck**; post village in Summers County.
- Buck**; run, a very small right-hand tributary to Elk River in Braxton County.
- Buck**; run, a right-hand tributary to Right Fork of Simpson Run in Taylor County.
- Buck**; run, a right-hand tributary to South Fork of Fishing Creek in Wetzel County.
- Buckeye**; branch, a very small left-hand tributary to Gauley River in Webster County.
- Buckeye**; creek, a small left-hand tributary to Elk River in Braxton County.
- Buckeye**; fork, a head fork of Little Skin Creek in Lewis County.
- Buckeye**; post village in Pocahontas County on the Chesapeake and Ohio Railway.
- Buck Garden**; branch, a small right-hand tributary to Peter Creek, a branch of Gauley River, in Nicholas County.
- Buckhannon**; county seat of Upshur County on the Baltimore and Ohio Railroad. Altitude, 1,500 feet. Population, 1,589.
- Buckhannon**; mountain, a broken, mountainous ridge in the western part of Lewis County.
- Buckhannon**; river, a large left-hand branch of Tygarts Valley River in Upshur, Barbour, and Randolph counties.
- Buckhorn**; fork, a left-hand branch of Little Sycamore Creek, a tributary to Elk River in Clay County.
- Buckhorn**; post village in Preston County.
- Buck Knob**; summit in Greenbrier County.
- Buck Knob**; summit in Pocahontas County. Altitude, 4,356 feet.
- Buckles**; branch, a small right-hand tributary to Twenty Mile Creek, a branch of Gauley River, in Fayette County.
- Buckley**; mountain, a short ridge east of Greenbrier River in Pocahontas County. Elevation, 3,000 feet.
- Buck Lick**; small right-hand tributary to Gauley River, a large branch of Kanawha River, in Nicholas County.
- Buck Lick**; run, a left-hand tributary to Spruce Run, a small branch of Cheat River, in Preston County.
- Buena**; post village in Tucker County.
- Buffalo**; creek, a very small left-hand branch of Guyandot River, a tributary to Ohio River, in Logan County.
- Buffalo**; creek, a small left-hand branch of Little Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Buffalo**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Buffalo**; creek, a right-hand branch of Guyandot River in Logan County.
- Buffalo**; creek, a very small right-hand tributary to New River in Fayette and Summers counties.
- Buffalo**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River in Logan County.
- Buffalo**; creek, a small right-hand tributary to North Branch of Potomac River in Grant County.
- Buffalo**; creek, a left-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.

- Buffalo**; creek, a right-hand branch of Little Kanawha River in Braxton County.
- Buffalo**; creek, a small left-hand branch of Ohio River, rising in Pennsylvania and flowing west through Brooke County into Ohio River.
- Buffalo**; fork, a left-hand tributary to East Fork of Greenbrier River in Pocahontas County.
- Buffalo**; fork, a right-hand branch of Smithers Creek, a tributary to Kanawha River, in Kanawha County.
- Buffalo**; fork, a small right-hand branch of Hughes Creek, a tributary to Kanawha River, in Kanawha County.
- Buffalo**; fork, a small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Buffalo**; run, a left-hand branch of Right Fork of Middle Fork of Little Kanawha River in Webster County.
- Buffalo**; run, a small left-hand branch of Deer Creek, a tributary to North Fork of Greenbrier River, in Pocahontas County.
- Buffalo**; run, a small right-hand tributary to Cheat River in Preston County.
- Buffalo**; run, a left-hand branch of South Fork of Fishing Creek in Wetzel County.
- Buffalo**; village in Putnam County on the Ohio Central Lines. Population, 364.
- Buffalo Bull Knob**; summit in Webster County.
- Buffalo Hills**; short ridge west of South Branch of Potomac River in Pendleton County. Elevation, 2,000 to 2,500 feet.
- Buffalolick**; post village in Roane County.
- Buffalo Lick**; very small left-hand tributary to Elk River in Kanawha County.
- Buffalo Ridge**; summit in Marthas Ridge in Pocahontas County.
- Buffington**; run, a right-hand branch of Cheat River in Preston County.
- Bufsa**; branch, a left-hand branch of Hurricane Creek, a tributary to Kanawha River, in Putnam County.
- Bula**; post village in Monongalia County.
- Bull**; creek, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Bull**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Bull**; creek, a small left-hand tributary to Ohio River in Wood County.
- Bull**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Bull**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Wayne County.
- Bull**; run, a left-hand branch of Cheat River in Preston County.
- Bull**; run, a left-hand branch of Wheeling Creek in Marshall County.
- Bull**; run, a left-hand branch of French Creek in Upshur County.
- Bull**; run, a small left-hand tributary to Cheat River in Tucker County.
- Bull**; run, a right-hand tributary to Cedar Creek in Gilmer County.
- Bull Fork**; run, a left-hand branch of Little Kanawha River in Braxton County.
- Bull Lick**; branch, a small right-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Bullrun**; post village in Preston County.
- Bullekin**; branch, a small right-hand branch of Little Sandy Creek, a tributary to Elk River, in Kanawha County.
- Bulltown**; post village in Braxton County.
- Bumble Bee**; run, a small left-hand tributary to South Fork of Cherry River in Greenbrier County.
- Bungers**; post village in Greenbrier County.
- Bunkerhill**; post village in Berkeley County on the Cumberland Valley Railroad.

- Bunners**; post village in Marion County.
- Burch**; post village in Mingo County.
- Burchfield**; post village in Wetzel County.
- Burdett**; post village in Putnam County.
- Burditt**; creek, a small right-hand tributary to Gauley River in Greenbrier County.
- Burk**; creek, a very small right-hand tributary to Elkhorn Creek in McDowell County.
- Burker**; run, a right-hand branch of North Fork of Fishing Creek in Wetzel County.
- Burkes**; creek, a very small left-hand tributary to Elk River in Kanawha County.
- Burlington**; post village in Mineral County. Altitude, 800 feet.
- Burner**; mountain, a short ridge at the head of Greenbrier River in Pocahontas County.
- Burner**; run, a left-hand branch of Fish Creek in Wetzel County.
- Burning Rock**; triangulation station in Wyoming County.
- Burning Spring**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Burning Springs**; post village in Wirt County.
- Burns**; run, a small left-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Burnside**; branch, a very small tributary of Coal River, in Boone County.
- Burnsville**; post village in Braxton County on the Baltimore and Ohio Railroad. Altitude, 758 feet.
- Burnt**; fork, a small right-hand branch of Slab Fork, a tributary to Guyandot River, in Raleigh County.
- Burnt Bottom**; branch, a very small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Burnt Cabin**; branch, a small right-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Burnt Cabin**; run, a right-hand branch of Tygart Valley River in Marion County.
- Burnt Camp**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.
- Burnthouse**; post village in Ritchie County.
- Burnt Ridge**; mountains in Raleigh County.
- Burnt Ridge**; short ridge between the heads of Greenbrier and North Fork of Pocahontas River in Pocahontas County.
- Burton**; post village in Wetzel County on the Baltimore and Ohio Railroad. Altitude, 1,060 feet.
- Bush**; run, a small right-hand tributary to French Creek in Upshur County.
- Buster Knob**; summit in Fayette County.
- Butcher**; branch a small left-hand tributary to New River in Fayette County.
- Butcher**; fork, a left-hand branch of Sand Fork in Gilmer and Lewis counties.
- Butcher**; run, a small left-hand tributary to Cedar Creek in Gilmer and Braxton counties.
- Butcher**; run, a small left-hand tributary to Right Fork of Steer Creek in Gilmer County.
- Butler**; post village in Mason County.
- Buzzard**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Buzzard**; branch, a small right-hand tributary to North Fork of Elkhorn Creek in McDowell County.
- Buzzard**; creek, a left-hand branch of Trace Creek in Putnam County.
- Buzzard**; run, a left-hand branch of Cheat River in Monongalia County.
- Byrne**; post village in Braxton County.-

**Byrnside**; post village in Putnam County.

**Cabell**; county, situated in the western part of the State bordering on Ohio River, which, with the Guyandot, drains it. Its surface is broken, being upon the lower slopes of the plateau. Area, 261 square miles. Population, 29,252—white, 27,713; negro, 1,537; foreign born, 378; county seat, Huntington. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Chesapeake and Ohio and the Ohio River railroads.

**Cabell**; creek, a right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Cabell**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Cabin**; branch, a very small right-hand tributary to Laurel Branch, a branch of Clear Fork of Guyandot River, in Wyoming County.

**Cabin**; creek, a small right-hand tributary to Guyandot River in Wyoming County.

**Cabin**; creek, a left-hand branch of Kanawha River in Kanawha and Fayette counties.

**Cabin**; fork, a small indirect right-hand tributary to Pond Fork of Little Coal River, a branch of Coal River, in Boone County.

**Cabin**; run, a small left-hand branch of Patterson Creek, a tributary to North Branch of Potomac River, in Mineral County.

**Cabin**; run, a small left-hand branch of Right Fork of Holly River in Braxton County.

**Cacapehon**; post village in Hampshire County.

**Cacapon**; mountains, a short ridge in Hampshire and Morgan counties. Elevation, 2,500 feet.

**Cacapon**; river, a large right-hand branch of Potomac River, rising in Hardy County, and flowing in a generally northeastern direction through Hardy, Hampshire, and Morgan counties. In its upper course it is known as Lost River.

**Cairo**; town in Ritchie County on the Baltimore and Ohio and on the Cairo and Kanawha Valley railroads. Altitude, 658 feet. Population, 653.

**Calcutta**; post village in Pleasants County.

**Calders Peak**; one of the summits of Swoopes Knobs in Monroe County.

**Caldwell**; post village and railway station in Greenbrier County, located on Howards Creek; also on Chesapeake and Ohio Railway. Altitude, 1,766 feet.

**Caldwell**; run, a left-hand branch of Saltlick Creek in Braxton County.

**Calf**; run, a left-hand branch of Indian Fork of Ellis Creek in Lewis County.

**Calhoun**; county, situated in the western part of the State on the Alleghany Plateau. Area, 276 square miles; population, 10,266—white, 10,183; negro, 83; foreign born, 26. County seat, Grantsville. The mean magnetic declination in 1900 was 1° 10'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°.

**Calhoun**; post village in Barbour County.

**Calis**; post village in Marshall County.

**Calvin**; post village in Nicholas County.

**Camden**; post village in Lewis County on the Ohio River Railroad.

**Camden on Gauley**; post village in Webster County on the Baltimore and Ohio Railroad.

**Cameron**; town in Marshall County on the Baltimore and Ohio Railroad. Altitude, 547 feet. Population, 964.

**Camp**; branch, a very small left-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.

- Camp**; branch, a very small right-hand tributary to Dingus Run, a branch of Guyandot River, in Logan County.
- Camp**; branch, a small right-hand tributary to Tug River in McDowell County.
- Camp**; branch, a very small right-hand tributary to Dunloup Creek, a branch of New River, in Fayette County.
- Camp**; branch, a right-hand tributary of Beech Fork of Twelve Pole Creek in Cabell County.
- Camp**; creek, a very small left-hand tributary to Elk River in Clay County.
- Camp**; creek, a left-hand tributary to Bluestone River, a branch of New River, in Mercer County.
- Camp**; creek, a right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Camp**; creek, a small right-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Camp**; creek, a very small right-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Camp**; creek, a right-hand tributary to Laurel Creek in Braxton and Webster counties.
- Camp**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Wayne County.
- Camp**; run, a left-hand branch of North Fork of Dunkard Creek in Monongalia County.
- Camp**; run, a right-hand tributary of Buffalo Creek in Marion County.
- Camp**; run, a left-hand tributary of Fishing Creek in Wetzel County.
- Camp**; post village in Doddridge County.
- Campbell**; creek, a right-hand tributary to Kanawha River in Kanawha County.
- Campbell**; fork, a small left-hand branch of Bell Creek, a tributary to Gauley River, in Kanawha County.
- Campbell**; run, a left-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Campbell**; post village in Calhoun County.
- Campcreek**; post village in Mercer County on CampCreek.
- Campus**; post village in Wyoming County.
- Canaan**; mountain, a broken, mountainous country in Tucker and Grant counties. Elevation, 3,500 to 4,000 feet.
- Canaan**; post village in Upshur County.
- Cane**; branch, a very small right-hand tributary to Kanawha River in Fayette County.
- Cane**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Cane**; fork, a small left-hand branch of Davis Creek, a tributary to Kanawha River, in Kanawha County.
- Cane**; fork, a small right-hand branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Canebrake**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.
- Canfield**; post village in Braxton County.
- Cannel Coal Hollow**; short left-hand tributary to Elk River in Clay County.
- Cannelton**; post village in Kanawha County on the Ohio Central Lines. Altitude, 639 feet.
- Cannoy**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Canoe**; run, a left-hand tributary to Monongahela River in Lewis County.
- Canoe**; run, a very small right-hand tributary to Elk River in Braxton County.
- Cansada**; post village in Clay County.

**Canterbury**; post village in Mingo County, on the Norfolk and Western Railway.  
**Cantikee**; branch, a very small right-hand tributary to Guyandot River in Mingo County.

**Canton**; village in Marion County.

**Cantwell**; post village in Ritchie County.

**Capehart**; post village in Mason County.

**Caperton**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 990 feet.

**Capon Bridge**; post village in Hampshire County, located on Cacapon River.

**Capon Iron Works**; post village in Hardy County.

**Capon Springs**; post village in Hampshire County.

**Captina**; post village in Marshall County on the Baltimore and Ohio Railroad.

**Carberry**; run, a right-hand tributary of Buffalo Creek in Marion County.

**Carbondale**; post village in Fayette County.

**Carder**; run, a right-hand branch of Lost Run in Taylor County.

**Carder**; run, a left-hand branch of Husted Creek in Taylor County.

**Caress**; post village in Braxton County.

**Carkin**; post village in Kanawha County.

**Carmel**; post village in Preston County.

**Carnes Knob**; summit in Clay County.

**Caro**; fork, a small left-hand tributary to Joe Creek, a branch of Coal River, in Boone County.

**Carpenter**; creek, a small right-hand branch of Second Creek, a tributary to Greenbrier River, in Monroe and Greenbrier counties.

**Carpenter**; fork, a small left-hand tributary to Little Birch River in Braxton County.

**Carpenter**; run, a left-hand branch of Little Fishing Creek in Wetzel County.

**Carrel**; post village in Wayne County.

**Carron Knob**; summit in Nicholas County. Altitude, 2,382 feet.

**Carrson**; fork, a right-hand tributary of North Fork of Fishing Creek in Wetzel County.

**Carter**; branch, a small right-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.

**Carter**; run, a right-hand branch of Wheeling Creek in Ohio County.

**Carthage**; post village in Jackson County.

**Cartwright**; branch, a small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.

**Cascade**; run, a right-hand branch of Buffalo Creek in Brooke County.

**Cascara**; post village in Doddridge County.

**Casey**; creek, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.

**Cashmere**; post village in Monroe County.

**Cass**; post village in Pocahontas County on the Chesapeake and Ohio Railway.

**Cassiday**; fork a small left-hand branch of Left Fork of Middle Fork of Tygarts Valley River in Randolph County.

**Cassity**; post village in Randolph County.

**Cassville**; post village in Monongalia County.

**Castle**; branch, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Wyoming County.

**Castle**; mountain, a ridge situated between South and North branches of Potomac River in Pendleton County. Elevation, 3,000 feet.

**Castle**; post village in Wyoming County.

**Castleman**; run, a left-hand branch of Buffalo Creek in Ohio and Brooke counties.

**Catawba**; post village in Marion County on the Baltimore and Ohio Railroad.

- Cave**; mountain on West and South branches of Potomac River in Pendleton and Grant counties. Elevation, 1,500 to 3,000 feet.
- Cave**; run, a small left-hand tributary to Little Kanawha River in Upshur County.
- Cave**; post village in Pendleton County.
- Cavill**; creek, a right-hand branch of Guyandot River in Cabell County.
- Cecil**; post village in Taylor County on the Baltimore and Ohio Railroad.
- Cedar**; branch, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Cedar**; branch, a very small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.
- Cedar**; branch, a very small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Cedar**; branch, a very small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Cedar**; branch, a very small right-hand tributary to New River in Summers County.
- Cedar**; creek, a very small right-hand tributary to Clear Fork of Guyandot River in Wyoming County.
- Cedar**; creek, a small left-hand branch of Slab Fork, a tributary to Guyandot River in Wyoming County.
- Cedar**; creek, a large left-hand branch of Little Kanawha River in Gilmer and Braxton counties.
- Cedar**; run, a small right-hand tributary to Wolf Creek, a branch of Greenbrier River, in Monroe County.
- Cedarburg**; post village in Wyoming County.
- Cedarcliff**; post village in Mineral County.
- Cedargrove**; post village in Kanawha County.
- Cedar Knob**; summit in Pendleton County.
- Cedarville**; post village in Gilmer County, located on Cedar Creek.
- Centennial**; post village in Monroe County.
- Center**; post village in Monongalia County.
- Centerpoint**; post village in Doddridge County.
- Centerville**; town in Wayne County. Population, 156.
- Central City**; town in Cabell County on the Baltimore and Ohio and the Chesapeake and Ohio railroads. Population, 1,580.
- Centralia**; post village in Braxton County on the Baltimore and Ohio Railroad.
- Central Station**; post village in Doddridge County.
- Century**; post village in Barbour County on the Baltimore and Ohio Railroad.
- Ceredo**; village in Wayne County on the Baltimore and Ohio, the Chesapeake and Ohio, and the Norfolk and Western railroads. Altitude, 545 feet. Population, 1,279.
- Chandler**; branch, a small left-hand branch of Twomile Creek, a tributary to Kanawha River, in Kanawha County.
- Channel**; run, a small right-hand tributary to Valley River in Randolph County.
- Chap**; post village in Boone County.
- Chapel**; post village in Braxton County.
- Chapmanville**; post village in Logan County.
- Chappel**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Charles Knob**; summit in Grant County.
- Charleston**; capital of the State and county seat of Kanawha County on the Charleston, Clendennin and Sutton, the Chesapeake and Ohio, and the Ohio Central railroads. Altitude, 660 feet. Population, 1,099.
- Charlestown**; county seat of Jefferson County on the Baltimore and Ohio and Norfolk and Western railroads. Altitude, 514 feet. Population, 2,392.

- Charley**; branch, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Charley**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell and Putnam counties.
- Charley Ridge**; summit in Pocahontas County.
- Charlotte**; branch, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Charlotte**; post village in Monongalia County.
- Cheat**; mountain, a short ridge in the northern part of Pocahontas County. Elevation, 4,000 feet.
- Cheat**; river, a large eastern branch of the Monongahela. It drains the eastern part of the State through a number of branches and flows generally northward to its mouth near the north boundary of the State.
- Cheatbridge**; post village in Randolph County.
- Cheat View**; summit in Monongalia County. Elevation, 2,212 feet.
- Chelyan**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Chenowith**; creek, a small right-hand tributary to Valley River in Randolph County. It rises in Chenowith Knob of Cheat Mountain.
- Chenowith Knob**; summit in Randolph County. Altitude, 3,870 feet.
- Cherry**; fork, a small right-hand tributary to Little Kanawha River in Upshur and Lewis counties.
- Cherry**; post village in Wirt County.
- Cherry**; river, a large left-hand branch of Gauley River which rises in two forks, North and South, in Greenbrier County, and flows northwestward into Nicholas County to its junction with the Gauley.
- Cherry**; run, a right-hand tributary of Potomac River on the boundary between Morgan and Berkeley counties.
- Cherry Glades**; marsh at the head of Cherry River in Greenbrier and Pocahontas counties.
- Cherry Pond**; mountain in Boone and Raleigh counties.
- Cherryrun**; post village in Morgan County on the Baltimore and Ohio and the Western Maryland railroads.
- Chesterville**; post village in Wood County.
- Chestnut**; post village in Mason County.
- Chestnut**; run, a left-hand branch of Leading Creek in Gilmer County.
- Chestnut Bottom**; run, a right-hand tributary of Ellis Creek in Gilmer County.
- Chestnut Knob**; branch, a very small right-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Chestnut Lick**; small left-hand branch of Left Fork of Steer Creek in Gilmer County.
- Chestnut Ridge**; short spur in Greenbrier County. Elevation, 2,500 to 3,000 feet.
- Chestnut Ridge**; short spur in Pocahontas County.
- Chestnut Ridge**; short spur in Monongalia and Preston counties. Elevation, 2,275 feet.
- Chew**; run, a small right-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Chicken**; run, a right-hand tributary of Right Fork of Simpson Creek in Taylor County.
- Chiefton**; post village in Marion County.
- Childress**; branch, a left-hand tributary of Buch Fork of Twelve Pole Creek in Wayne County.
- Childs**; post village in Wetzel County.
- Chilton**; post village in Kanawha County on the Kanawha and Coal River Railway.
- Chimney Ridge**; mountains in Monroe County.



- Chimney Rock**; run, a small left-hand tributary to Elk River in Randolph County.
- Chrisley**, fork, a small right-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- Christian**; fork, a small right-hand tributary to Brush Creek, a branch of Bluestone River, in Mercer County.
- Christian**; post village in Logan County.
- Christopher**; run, a right-hand branch of Cheat River in Monongalia County.
- Chub**; fork, a small right-hand branch of Naul Creek in Braxton County.
- Church**; fork, a right-hand branch of Fish Creek in Wetzel County.
- Church Knob**; summit in Upshur County.
- Churchville**; post village in Lewis County.
- Cicerone**; post village in Roane County.
- Circleville**; post village in Pendleton County.
- Cirtsville**; post village in Raleigh County. Altitude, 1,640 feet.
- Cisko**; post village in Ritchie County.
- Clapboard**; run, a small left-hand tributary to Valley River in Randolph County.
- Claremont**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River.
- Clarence**; post village in Roane County.
- Claria**; post village in Calhoun County.
- Clark**; branch, a very small right-hand tributary to Elkhorn Creek in McDowell County.
- Clark**; gap in Great Flat Top Mountain in Mercer County.
- Clarksburg**; county seat of Harrison County on the Baltimore and Ohio Railroad. Population, 4,050. Altitude, 1,031 feet.
- Claude**; post village in Taylor County.
- Clawson**; post village in Pocahontas County.
- Clay**; branch, a head fork of Big Cub Creek, a tributary to Guyandot River, in Wyoming County.
- Clay**; county, situated in the central part of the State, in the Alleghany Plateau; it is here deeply dissected. It is drained mainly by Elk River. Area, 348 square miles. Population, 8,248—white, 8,230; negro, 18; foreign born, 48. County seat, Clay. The mean magnetic declination in 1900 was 1° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Charleston, Clendennin and Sutton Railroad.
- Clay**; county seat of Clay County.
- Clayton**; post village in Summers County.
- Clear**; fork, a left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Clear**; fork, a right-hand branch of Guyandot River in Wyoming County.
- Clear**; fork, a stream in Raleigh County uniting with Marsh Fork to form Coal River.
- Clearcreek**; post village in Raleigh County. Altitude, 1,520 feet.
- Clear Fork**; gap in Guyandot Mountain in Raleigh and Wyoming counties.
- Clear Drain**; a right-hand branch of Fish Creek in Wetzel County.
- Clements**; post village in Barbour County on the Baltimore and Ohio Railroad.
- Clen**; fork, a right-hand branch of Laurel Branch of Clear Fork of Guyandot River in Wyoming County.
- Clen**; gap in spur of Guyandot Mountains, caused by Laurel Fork, in Wyoming County.
- Clendenin**; post village in Kanawha County on the Charleston, Clendennin and Sutton Railroad. Altitude, 624 feet.
- Cleveland**; post village in Webster County.
- Cleveland Knob**; summit in Nicholas County.

- Cliff**; run, a right-hand branch of Fish Creek in Wetzel County.
- Cliff Knob**; summit in Webster County. Altitude, 3,012 feet.
- Clifftop**; post village in Fayette County.
- Clifton**; village in Mason County on the Baltimore and Ohio Railroad. Population, 427.
- Clifton Mills**; post village in Preston County.
- Clifty**; post village in Fayette County.
- Climer**; creek, a very small left-hand tributary to Trace Fork of Mud River, a branch of Guyandot River, in Putnam County.
- Clint**; post village in Monroe County.
- Clinton**; post village in Ohio County.
- Clinton Furnace**; post village in Monongalia County.
- Clintonville**; post village in Greenbrier County.
- Clio**; post village in Roane County.
- Cloat**; run, a small left-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Clover**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Clover**; run, a left-hand tributary to Cheat River, in Tucker County.
- Clover Creek**; mountain, a short ridge in Pocahontas County. Elevation, 3,000 to 4,000 feet.
- Cloverdale**; post village in Monroe County.
- Cloverlick**; branch, a small left-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Clover Lick**; fork, a left-hand branch of Oil Creek, in Lewis County.
- Cloverlick**; post village in Pocahontas County on the Chesapeake and Ohio Railway.
- Clower**; post village in Hardy County.
- Cluster**; post village in Pleasants County.
- Clyde**; post village in Wetzel County.
- Coal**; branch, a very small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.
- Coal**; fork, a left-hand branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Coal**; fork, a small left-hand branch of Campbell Fork, a tributary to Kanawha River, in Kanawha County.
- Coal**; river, a left-hand branch of Monongahela River in Marion County.
- Coal**; run, a large left-hand branch of Kanawha River, rising in Raleigh County, and flowing northeastward through Boone County. It forms the boundary line between a portion of Lincoln and Kanawha counties and enters Kanawha River at the town of St. Albans.
- Coal**; run, a small left-hand tributary to New River in Fayette County.
- Coal Bank**; branch, a small left-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Coalburg**; post village in Kanawha County on the Chesapeake and Ohio Railway and on Kanawha River. Altitude, 623 feet.
- Coaldale**; post village and railway station in Mercer County on the Norfolk and Western Railway and on South Fork of Elkhorn Creek. Altitude, 2,345 feet.
- Cobb**; creek, a left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.
- Cobbs**; post village in Boone County.
- Coburn**; post village in Wetzel County.
- Cochran Knob**; summit in Lewis County.
- Coco**; post village in Kanawha County.
- Coffin**; creek, a small left-hand tributary to Knapp Creek, a branch of Greenbrier River, in Pocahontas County.

- Coffman**; post village in Greenbrier County.
- Cokeleys**; village in Ritchie County.
- Coketon**; post village in Tucker County on the West Virginia Central and Pittsburg Railway.
- Colaw Knob**; summit of the Allegheny Mountains in Pocahontas County. Altitude, 4,214 feet.
- Cold**; fork, a small right-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- Cold Knob**; fork, a small left-hand tributary to South Fork of Cherry River in Greenbrier County.
- Cold Knob**; summit in Greenbrier County. Elevation, 4,318 feet.
- Cold Spring**; run, a very small right-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Coldstream**; post village in Hampshire County.
- Coldwater**; post village in Doddridge County.
- Cole**; mountain, a short ridge in Greenbrier County south of Greenbrier River.
- Colebank**; post village in Preston County.
- Coleman**; creek, a right-hand branch of Guyandot River in Lincoln County.
- Colemans**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Coles**; mountain, a short ridge in Greenbrier County. Elevation, 2,500 feet.
- Colfax**; post village in Marion County on the Baltimore and Ohio Railroad.
- Colic**; mountain, a short ridge west of South Fork of Potomac River in Pendleton County.
- Colliers**; post village in Brooke County.
- Collins**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Collins**; run, a right-hand branch of Stewart's Creek in Gilmer County.
- Collison**; creek, a small left-hand tributary to Gauley River in Nicholas County.
- Columbia Sulphur Springs**; post village in Greenbrier County located on Anthony Creek.
- Columbus**; post village in Clay County.
- Comer**; branch, a small right-hand tributary to Barker Creek, a branch of Guyandot River, in Wyoming County.
- Comfort**; post village in Boone County.
- Conally**; run, a small right-hand tributary to Valley River in Randolph County.
- Conaway**; post village in Tyler County.
- Concord**; post village in Hampshire County.
- Concord Church**; village in Mercer County. Altitude, 2,620 feet.
- Confidence**; post village in Putnam County.
- Confluence**; post village in Lewis County.
- Conger**; fork, a small right-hand branch of Old Lick Creek, a tributary to Holly River, in Webster County.
- Congo**; post village in Hancock County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway.
- Conings**; post village in Gilmer County.
- Conley**; branch, a small right-hand tributary to Island Creek, a branch of Guyandot River, in Logan County.
- Connolly**; branch, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Conyer**; fork, a right-hand branch of Cedar Creek, in Gilmer and Braxton counties.
- Cool**; branch, a very small right-hand tributary to Huff Creek, a branch of Guyandot River, in Wyoming County.
- Cool Spring Knob**; Summit in Webster County.

- Coon**; branch, a very small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.
- Coon**; branch, a very small left-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Coon**; branch, a very small left-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Coon**; branch, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Coon**; creek, a very small right-hand tributary to Gauley River, in Webster County.
- Coon**; creek, a small left-hand branch of Meadow Creek, a tributary to New River, in Summers County.
- Coon**; creek, a right-hand tributary of Hurricane Creek in Putnam County.
- Coon**; creek, a left-hand tributary to Elk River in Braxton County.
- Coon**; fork, a small left-hand branch of Rock Castle Creek, a tributary to Guyandot River, in Wyoming County.
- Coon**; run, a right-hand branch of Cove Lick, a tributary to Sand Fork, in Lewis County.
- Coon**; run, a right-hand branch of West Fork River in Harrison and Marion counties.
- Cooney Otter**; creek, a left-hand branch of Barker Creek, a tributary to Guyandot River, in Wyoming County.
- Coon Knob**; summit in Braxton County. Altitude, 1,725 feet.
- Coon Knob**; triangulation station in Mingo County.
- Coonakin**; branch, a very small left-hand tributary to Elk River in Kanawha County.
- Coon Tree**; branch, a small left-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Cooper**; creek, a small right-hand tributary to Glade Creek, a branch of New River, in Raleigh County.
- Cooper**; creek, a right-hand tributary to Elk River in Kanawha County.
- Cooper**; rock, a summit in Monongalia County. Elevation, 2,000 feet.
- Cooper**; run, a small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.
- Cooper Knob**; Summit of Brown Mountain in Tucker County.
- Coopers**; post village in Mercer County on the Norfolk and Western Railway and on Bluestone River. Altitude, 2,266 feet.
- Copeland**; branch, a small right-hand tributary to Big Creek, a small branch of Gauley River, in Fayette County.
- Copeland**; knob in Taylor County.
- Copen**; post village in Braxton County.
- Copen**; run, a small right-hand tributary to Little Kanawha River in Braxton County.
- Copenhaver**; fork, a small left-hand tributary to Little Sandy Creek, a small branch of Elk River, in Kanawha County.
- Copenhaver**; post village in Kanawha County.
- Copper**; run, a left-hand tributary to Little Kanawha River in Gilmer and Braxton counties.
- Copperas Mine**; fork, a small left-hand branch of Trace Fork of Guyandot River, a tributary to Ohio River, in Logan County.
- Copperhead**; branch, a very small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Copper Snake**; run, a small left-hand branch of Steer Run in Gilmer County.
- Corbin**; branch, a right-hand branch of Booths Creek in Taylor County.
- Corcoran**; post village in Randolph County.
- Core**; post village in Monongalia County.

- Corinth**; post village in Preston County on the Baltimore and Ohio Railroad.
- Cork**; post village in Tyler County.
- Corley**; post village in Braxton County.
- Corliass**; post village in Fayette County.
- Corn**; post village in Mason County.
- Cornstalk**; post village in Greenbrier County.
- Cornwallis**; post village in Ritchie County on the Baltimore and Ohio Railroad.
- Cortland**; post village in Tucker County.
- Cos**; post village in Upshur County.
- Cosner Gap**; height in Grant County. Elevation, 1,325 feet.
- Cottageville**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Cottle Glades**; marsh in Nicholas County.
- Cottle Knob**; summit in Nicholas County. Altitude, 3,120 feet.
- Cottonhill**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 792 feet.
- Cotton Hill**; short ridge south of Kanawha River in Fayette County.
- Couger**; fork, tributary to Holly River.
- Coulter**; run, a right-hand branch of Middle Wheeling Creek in Ohio County.
- Countersfeit**; branch, a small left-hand branch of Witchers Creek, a tributary to Kanawha River, in Kanawha County.
- Counts ville**; post village in Roane County.
- Courtney**; run, a left-hand branch of Monongahela River in Monongalia County.
- Cove**; creek, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Cove**; creek, a small right-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Cove**; mount, a summit in Lincoln County. Altitude, 1,308 feet.
- Cove**; mountain, a short ridge in Monroe County. Elevation, 3,000 to 3,420 feet, the latter being the height of one of its peaks.
- Covecreek**; post village in Wayne County.
- Covegap**; post village in Wayne County.
- Cove Lick**; right-hand branch of Sand Fork in Lewis County.
- Cow**; creek, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Cow**; creek, a small left-hand branch of Poplar Fork of Kanawha River in Putnam County.
- Cow**; creek, a small left-hand branch of Pond Fork of Little Coal River in Boone County.
- Cow**; creek, a left-hand tributary to Island Creek, a branch of Guyandot River in Logan County.
- Cow**; run, a very small left-hand tributary to Buffalo Creek, a branch of Elk River, in Clay County.
- Cowen**; town in Webster County on the Baltimore and Ohio Railroad. Population, 257.
- Cow Skin**; fork, a small left-hand branch of Lower Sleith Fork, in Braxton County.
- Coxs Landing**; post village in Cabell County on the Baltimore and Ohio Railroad.
- Coxs Mills**; post village in Gilmer County.
- Crabapple Knob**; summit in Kanawha County. Altitude, 1,380 feet.
- Crab Orchard**; creek, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Craig**; run, a small left-hand tributary to Williams River in Webster County.
- Craigmoor**; post village in Harrison County.
- Craigsville**; post village in Nicholas County.
- Crammeys**; run, a left-hand branch of Cheat River in Monongalia County.

- Cranberry**; creek, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Cranberry**; mountain, a short ridge in Pocahontas County. Elevation, 3,500 to 4,000 feet.
- Cranberry**; river, a large left-hand tributary to Gauley River. It rises in Cranberry Mountain in Pocahontas County and flows northwestward through Webster and Nicholas counties to its junction with the Gauley.
- Cranberry Flat**; short ridge between Laurel Branch and Stone Coal Run in the central part of Randolph County.
- Cranberry Glades**; marsh at the head of Cranberry River in Pocahontas County.
- Crane**; creek, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Crane**; creek, a small left-hand tributary to Bluestone River in Mercer County.
- Crane**; fork, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Crane Camp**; run, a small right-hand tributary to West Fork of Monongahela River in Lewis County.
- Cranesville**; post village in Preston County.
- Crane Trace**; branch, a small left-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Crany**; post village in Wyoming County.
- Craven**; run, a small right-hand tributary to Valley River in Randolph County.
- Crawford**; run, a small left-hand tributary to Gauley River in Nicholas County.
- Crawford**; run, a small right-hand tributary to Valley River in Randolph County.
- Crawford**; post village in Lewis County.
- Crawley**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Crawley**; post village in Greenbrier County.
- Crescent**; post village in Fayette County on Kanawha River and on the Chesapeake and Ohio Railway. Altitude, 638 feet.
- Creston**; post village in Wirt County.
- Crickard**; post village in Randolph County.
- Crickmer**; post village in Fayette County.
- Crimson Springs**; post village in Monroe County.
- Crisp**; post village in Pleasants County.
- Crook**; post village in Boone County.
- Crooked**; creek, a left-hand branch of Scary Creek, a tributary to Kanawha River, in Putnam County.
- Crooked**; creek, a small right-hand branch of Guyandot River, a tributary to Ohio River, in Logan County.
- Crooked**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Crooked**; fork, a left-hand branch of Sand Fork in Lewis County.
- Crooked**; fork, a right-hand branch of Right Fork of Steer Creek in Gilmer and Braxton counties.
- Crooked**; fork, a right-hand tributary to the head of Big Sycamore Creek, a small branch of Elk River, in Clay County.
- Crooked**; run, a small left-hand tributary to North River, a branch of Cacapon River, in Hampshire County.
- Crooked**; run, a small left-hand branch of Cedar Creek in Gilmer County.
- Crooked**; run, a small left-hand branch of Wolf Creek, a tributary to New River, in Fayette County.
- Crooked Ridge**; short spur in Fayette County.
- Crossroads**; post village in Monongalia County.

- Crouch Knob**; summit in Randolph County.
- Crow**; post village in Raleigh County.
- Crow**; run, a left-hand branch of Fishing Creek in Wetzel County.
- Crownhill**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Crow Summit**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Crump**; branch, a very small left-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Crumps Bottom**; post village in Summers County.
- Cub**; branch, a very small right-hand tributary to Run Creek, a branch of Guyandot River, in Logan County.
- Cub**; branch, a small right-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Cub**; run, a right-hand tributary of Right Fork of Steer Creek in Gilmer County.
- Cuba**; post village in Jackson County.
- Cubana**; post village in Randolph County.
- Cucumber**; creek, an indirect right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Culler**; run, a left-hand tributary to Lost River in Hardy County.
- Culloden**; town in Cabell County on the Chesapeake and Ohio Railway. Population, 99.
- Culverson**; creek, a small creek rising and sinking in Greenbrier County.
- Cummings**; creek, a small left-hand branch of Knapp Creek, a tributary to Greenbrier River, in Pocahontas County.
- Cunningham**; fork, a left-hand branch of Big Buffalo Creek in Braxton County.
- Cunningham Knob**; summit of the Allegheny Mountains in Randolph County. Altitude, 4,485 feet.
- Cupboard**; run, a small left-hand tributary to Oil Creek in Lewis County.
- Curran Knob**; summit in Randolph County.
- Curry**; post village in Logan County.
- Curry Ridge**; a short spur between Plummer and Lost rivers in Taylor County.
- Curtin**; post village in Nicholas County on the Baltimore and Ohio Railroad.
- Curtis**; run, a left-hand tributary of Castleman Run in Ohio County.
- Cutlip**; fork, a right-hand branch of Little Otter Creek in Braxton County.
- Cutlips**; post village in Braxton County.
- Cutwright**; run, a small left-hand tributary to Buckhannon River in Upshur County.
- Cuzzart**; post village in Preston County.
- Cyclone**; post village in Logan County. Altitude, 854 feet.
- Cyrus**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Cyrus**; post village in Roane County.
- Daddy**; run, a left-hand branch of Cedar Creek in Gilmer County.
- Dahmer**; post village in Pendleton County.
- Dailey**; village in Jefferson County on the West Virginia Central and Pittsburgh Railway.
- Daisy**; village in Wood County.
- Dakon**; post village in Wetzel County.
- Dale**; post village in Tyler County.
- Dallas**; post village in Marshall County.
- Dallison**; post village in Wood County.
- Dam**; creek, a very small right-hand branch of Marrowbone Creek, a tributary to Tug Fork of Big Sandy River, in Logan County.
- Dameron**; post village in Raleigh County.

- Dan**; branch, a small left-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Dan Harman**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Daniels**; post village in Raleigh County.
- Danstown**; post village in Jackson County.
- Danville**; post village in Boone County.
- Darkeville**; post village in Berkeley County on the Cumberland Valley Railroad.
- Darnell**; hollow in Monongalia County.
- Dartmoor**; post village in Barbour County on the West Virginia Central and Pittsburg Railway.
- Dambenspeck Knob**; summit in Nicholas County. Altitude, 3,020 feet.
- Dase**; branch, a very small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan and Wyoming counties.
- Dave Green**; branch, a small right-hand tributary to Pond Fork of Little Coal River, a branch of Coal River, in Boone County.
- Daves**; fork, a small right-hand branch of Brush Creek, a tributary to Bluestone River, in Mercer County.
- David**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Davis**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Davis**; creek, a left-hand tributary to Kanawha River in Kanawha County.
- Davis**; fork, a very small right-hand tributary to Sycamore Creek, a branch of Clear Fork of Coal River, in Raleigh County.
- Davis**; run, a small left-hand tributary to Birch River in Braxton County.
- Davis**; town in Tucker County on the West Virginia Central and Pittsburg Railway. Altitude, 1,077 feet. Population, 2,391.
- Davis Knob**; summit in Braxton County. Altitude, 1,565 feet.
- Davis, Mount**; triangulation station in Cabell County. Altitude, 1,077 feet.
- Davis Trace**; branch, a very small right-hand tributary to Middle Fork of Mud River in Lincoln County.
- Davisville**; post village in Wood County, on the Baltimore and Ohio Railroad.
- Davy**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Davy**; branch, a very small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.
- Davy**; station in McDowell County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Davy Fork**; creek, a right-hand branch of Buffalo Creek in Marion County.
- Davy**; run, a small left-hand branch of Spice Run, a tributary to Greenbrier River, in Greenbrier County.
- Davy Cook**; branch, a very small right-hand tributary to Toney Fork of Clear Fork, a branch of Guyandot River, in Wyoming County.
- Davys**; creek, a small left-hand tributary to Greenbrier River in Greenbrier County.
- Dawson**; post village in Greenbrier County.
- Day**; mountain, a short spur in Pocahontas County. Elevation, 3,000 to 3,500 feet.
- Day**; run, a small right-hand tributary to Williams River in Pocahontas County.
- Daybrook**; post village in Monongalia County.
- Day Camp**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Dayton**; post village in Harrison County. Altitude, 925 feet.
- Dean**; post village in Wetzel County.



- Debby**; post village in Mason County.
- Deckers**; creek, a small right-hand branch of Monongahela River in Preston and Monongalia counties.
- Decota**; post village in Kanawha County.
- Deep**; run, a small right-hand tributary to North Fork of Potomac River in Mineral County.
- Deep**; run, a small left-hand tributary to Elk River in Webster County.
- Deep**; run, a small left-hand tributary to Holly River in Webster County.
- Deep Ford**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.
- Deep Hole**; creek, a very small right-hand branch of West Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Deepvalley**; post village in Tyler County.
- Deepwater**; post village in Fayette County on Kanawha River and on the Chesapeake and Ohio Railway. Altitude, 645 feet.
- Deer**; creek, a right-hand branch of North Fork of Greenbrier River in Pocahontas County.
- Deer**; creek, a right-hand tributary to Hominy Creek, a branch of Gauley River, in Nicholas County.
- Deer**; run, a small right-hand tributary to Little Birch River in Braxton County.
- Deer**; run, a small right-hand tributary to South Branch of Potomac River in Pendleton County.
- Deer Knob**; summit in Upshur County.
- Deerlick**; post village in Mason County.
- Deerrun**; post village in Pendleton County.
- Deerskin**; branch, a small left-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Deerwalk**; post village in Wood County.
- Defeat**; branch, a small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Deitz**; post village in Fayette County.
- Dekalb**; post village in Gilmer County, situated on Little Kanawha River.
- Delancy**; post village in Wood County.
- Delashmeet**; creek, a very small left-hand tributary to Bluestone River in Mercer County.
- Delila**; post village in Webster County.
- Dell**; post village in Upshur County.
- Dellslow**; post village in Monongalia County on the Morgantown and Kingwood Railroad.
- Delong**; post village in Pleasants County.
- Delorme**; railway station in Logan County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Delphi**; post village in Nicholas County.
- Delray**; post village in Hampshire County.
- Delta**; post village in Braxton County.
- Dempsey**; branch, a left-hand branch of Laurel Creek, a tributary to New River, in Fayette County.
- Dempsey**; mountain, a short ridge north of Greenbrier River in Summers County. Elevation, 2,500 feet.
- Dempsey**; post village in Fayette County.
- Dennis**; post village in Greenbrier County.
- Dennis**; run, a small right-hand branch of Laurel Creek, a tributary to Elk River, in Webster County.

- Dennison**; fork, a small left-hand branch of Laurel Fork, a tributary to Spruce Fork of Little Coal River, in Boone County.
- Dennison**; fork, a left-hand tributary of Mud River in Lincoln County.
- Dent**; post village in Barbour County.
- Desert**; branch, a small left-hand tributary to North Fork of Cherry River in Nicholas County.
- Desert**; fork, a right-hand head fork of Holly River in Webster County.
- Deakins**; fork, a small left-hand branch of Rich Creek, a tributary to East Fork of Twelvepole Creek, in Wayne County.
- Deuls**; run, a left-hand branch of Buffalo Creek in Marion County.
- Devil**; creek, a small right-hand branch of Second Creek, a tributary to Greenbrier River, in Monroe County.
- Devil**; run, a very small right-hand tributary to Little Kanawha River in Braxton County.
- Devil**; run, a small right-hand tributary to Middle Fork of Tygarts Valley River in Barbour and Randolph counties.
- Devil Nose**; summit in Clay County.
- Devils**; fork, a small left-hand tributary to Guyandot River in Raleigh County.
- Devils Den**; branch, a small right-hand branch of Leatherwood Creek, a tributary to Elk River, in Clay County.
- Dewey**; post village in Mercer County.
- De Witt**; post village in Wyoming County.
- Dexter**; post village in Roane County.
- Dial**; post village in Kanawha County.
- Diamond**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Diana**; post village in Webster County on the Holly River and Addison Railway.
- Diatter**; run, a small right-hand tributary to Birch River in Braxton County.
- Dick**; creek, a very small right-hand tributary to Little Coal River, a branch of Coal River and tributary to Kanawha River, in Boone County.
- Dickerson**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Dick Ridge**; spur in Nicholas County.
- Dickson**; post village in Wayne County on the Norfolk and Western Railway.
- Dick Trace**; small right-hand branch of Dingus Run, a tributary to Guyandot River, in Logan County.
- Dicy**; post village in Wayne County.
- Difficult**; creek, a small right-hand tributary to North Branch of Potomac River in Grant County.
- Dilley**; run, a small left-hand branch of Strange Creek, a tributary to Elk River, in Nicholas County.
- Dilleys Mill**; post village in Pocahontas County.
- Dillon**; branch, a small right-hand tributary to Sand Lick Creek, a branch of Marsh Fork of Coal River, in Raleigh County.
- Dillon**; run, a small left-hand tributary to Cacapon River in Hampshire County.
- Dillons Run**; post village in Hampshire County.
- Dimmock**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,045 feet.
- Dingess**; branch, a very small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.
- Dingess**; branch, a very small left-hand tributary to Elk Creek, a branch of Guyandot River, in Logan County.
- Dingess**; branch, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.

- Dingess**; fork, a very small left-hand branch of Big Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Dingess**; post village in Mingo County.
- Dingess**; station in Logan County on the Norfolk and Western Railway and on Right Fork of Twelvepole Creek.
- Dingess Trace**; very small right-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Logan County.
- Dingus**; run, a small right-hand branch of Guyandot River in Logan County.
- Divide**; post village in Fayette County.
- Dixie**; post village in Fayette County.
- Dixon**; run, a right-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Doak**; post village in Doddridge County.
- Doane**; post village in Wayne County, on the Norfolk and Western Railway.
- Dobbin**; post village in Grant County on North Fork of Potomac River and on the West Virginia Central and Pittsburg Railway. Altitude, 2,593 feet.
- Dobbin Ridge**; short, broken, mountainous country in Tucker and Grant counties.
- Doctor**; branch, a very small right-hand tributary to Elk River, a large branch of Kanawha River, in Kanawha County.
- Dodd**; post village in Roane County.
- Doddridge**; county, situated in the northwestern part of the State on the Allegheny plateau. Area, 344 square miles. Population, 13,689—white, 13,663; negro, 25; foreign born, 129. County seat, West Union. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature, 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.
- Dodrill**; post village in Calhoun County.
- Dodson**; run, a small right-hand tributary to Valley River in Randolph County.
- Doe**; branch, a small left-hand tributary to Bluestone River, a branch of New River, in Mercer County.
- Doe**; run, a left-hand branch of Tygarts Valley River in Taylor County.
- Dogbone**; branch, a small left-hand tributary to Left Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Dogway**; fork, a small left-hand tributary to Cranberry River in Webster and Pocahontas counties.
- Dogwood**; creek, a small left-hand branch of Meadow River, a tributary to Gauley River, in Fayette County.
- Dola**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Dolan Knob**; summit on boundary line between Cabell and Wayne counties. Altitude, 1,090 feet.
- Doman**; post village in Hardy County.
- Dombey**; village in Wood County.
- Donald**; post village in Nicholas County.
- Donlan**; post village in Gilmer County.
- Donnelly**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Donohue**; post village in Ritchie County.
- Dorcas**; post village in Grant County.
- Dority**; post village in Preston County.
- Dorr**; post village in Monroe County.
- Dorsey**; branch, a very small left-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.
- Dorsey**; knob in Monongalia County. Elevation, 1,438 feet.
- Dotson**; post village in McDowell County.

**Double Camp**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.

**Dougher Knob**; summit in Greenbrier County. Altitude, 2,818 feet.

**Dougherty**; creek, a small right-hand tributary to Cheat River in Preston County.

**Douglas**; fork, a small right-hand tributary to Elk River in Randolph County.

**Douglas**; post village in Calhoun County on the West Virginia Central and Pittsburgh Railway.

**Dovenor**; post village in Lewis County.

**Dowdy**; creek, a very small right-hand tributary to New River in Fayette County.

**Doyle**; post village in Wood County.

**Dragstone**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Wayne County.

**Drake**; run, a right-hand branch of Pyles Fork of Buffalo Creek in Marion County.

**Drawdy**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.

**Drews**; creek, a left-hand branch of Peachtree Creek, a tributary to Marsh Fork of Coal River, in Raleigh County.

**Drift**; branch, a very small right-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Driftwood**; post village in Pocahontas County.

**Driscoll**; post village in Pocahontas County.

**Droop**; mountain, a short spur in Greenbrier and Pocahontas counties. One of its peaks has an altitude of 3,634 feet.

**Dropping Lick**; creek, a small left-hand tributary to Indian Creek, a branch of New River, in Monroe County.

**Dry**; branch, a very small left-hand branch of Davis Creek, a tributary to Kanawha River, in Kanawha County.

**Dry**; branch, a small right-hand tributary to Campbell Creek, a branch of Kanawha River, in Kanawha County.

**Dry**; branch, a small right-hand branch of Witchers Creek, a tributary to Kanawha River, in Kanawha County.

**Dry**; branch, a right-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.

**Dry**; branch, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.

**Dry**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.

**Dry**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.

**Dry**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Dry**; creek, a small right-hand branch of Rich Creek, a tributary to New River, in Monroe County.

**Dry**; creek, a small right-hand branch of Spring Creek, a tributary to Greenbrier River, in Greenbrier County.

**Dry**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.

**Dry**; creek, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.

**Dry**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Dry**; creek, a left-hand tributary to Howards Creek, a branch of Greenbrier River, in Greenbrier County. Its headwater is known locally as Tuckahoe Creek.

- Dry**; fork, a left-hand branch of Lower Bull Run, a small right-hand tributary to Cedar Creek, in Gilmer County.
- Dry**; fork, a right-hand fork of Cheat River in Tucker and Randolph counties.
- Dry**; fork, a small right-hand tributary to Elk River in Pocahontas County.
- Dry**; fork, a large right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Dry**; run, a small left-hand tributary to South Branch of Potomac River in Pendleton County.
- Dry**; run, a small left-hand tributary to Little Kanawha River in Gilmer County.
- Dry**; run, a right-hand tributary to North Fork of Potomac River in Pendleton County.
- Dry**; run, a small right-hand tributary to Valley River in Randolph County.
- Dry**; run, a small right-hand tributary to Left Fork of Buckhannon River in Randolph County.
- Dry**; run, a small right-hand tributary to South Branch of Potomac River in Pendleton County.
- Dry**; run, a small right-hand branch of Second Creek, a tributary to Greenbrier River, in Monroe County.
- Dry**; run, a left-hand branch of Tanner Creek in Gilmer County.
- Dry**; run, a right-hand branch of Lost Run in Taylor County.
- Drybranch**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Drycreek**; post village in Raleigh County. Altitude, 1,342 feet.
- Dryfork**; post village in Randolph County on the Dry Fork Railroad.
- Dryrun**; hollow in Horse Ridges in Morgan County.
- Dryrun**; post village in Pendleton County.
- Dubree**; post village in Fayette County.
- Duck**; creek, a small left-hand tributary to Little Kanawha River in Gilmer County.
- Duck**; creek, a small right-hand branch of Elk River in Braxton County.
- Duckworth**; post village in Doddridge County on the Baltimore and Ohio Railroad.
- Dudley**; fork, a left-hand tributary of Pyles Fork of Buffalo Creek in Marion County.
- Dudley**; post village in Cabell County.
- Duffields**; post village in Jefferson County on the Baltimore and Ohio Railroad. Altitude, 562 feet.
- Duffy**; post village in Lewis County.
- Dugout**; post village in Raleigh County.
- Duhring**; post village in Mercer County on the Norfolk and Western Railway and on Bluestone River. Altitude, 2,333 feet.
- Duke**; post village in Kanawha County on the Baltimore and Ohio Railroad.
- Dulin**; post village in Wirt County.
- Dull**; creek, a small right-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Dumpling**; run, a small left-hand tributary to South Branch of Potomac River in Hampshire and Hardy counties.
- Duncan**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Duncan**; run, a small left-hand branch of Deer Creek, a tributary to North Fork of Greenbrier River, in Pocahontas County.
- Dunham Lick**; run, a right-hand branch of Prichett Creek in Marion County.
- Dunkard**; creek, a left-hand branch of Monongahela River, heading in Monongalia County in North, South, and Middle forks.
- Dunkard Mill**; run, a left-hand branch of Buffalo Creek in Marion County.
- Dunleith**; post village in Wayne County.
- Dunloup**; creek, a small left-hand tributary to New River in Fayette and Raleigh counties.

- Dunlow**; post village in Wayne County on the Norfolk and Western Railway.
- Dunmore**; post village in Pocahontas County.
- Dunns**; post village in Mercer County.
- Duo**; post village in Greenbrier County.
- Durbin**; post village in Pocahontas County on the Chesapeake and Ohio and on the West Virginia Central and Pittsburg railways.
- Dust Camp**; run, a small left-hand tributary to Little Kanawha River in Gilmer County.
- Dutch**; fork, a very small left-hand tributary to Pocahontas River in Kanawha County.
- Dyers**; run, a small left-hand tributary to Elk River in Webster County.
- Eads Ridge**; summit in Monroe County. Altitude, 2,854 feet.
- Eagle**; branch, a small right-hand tributary to Greenbrier River in Summers County.
- Eagle**; post village in Fayette County on Kanawha River and on the Chesapeake and Ohio Railway.
- Eagle Mills**; post village in Doddridge County.
- Earl**; post village in Nicholas County.
- Earnshaw**; post village in Wetzel County.
- East**; fork, a right-hand branch of Fourteenmile Creek, a tributary to Guyandot River, in Lincoln County.
- East**; river, a left-hand tributary to New River in Mercer County.
- East**; run, a right-hand branch of Buffalo Creek in Marion County.
- Eastbank**; town in Kanawha County on the Chesapeake and Ohio Railway and on Kanawha River. Altitude, 623 feet. Population, 468.
- East Lynn**; post village in Wayne County.
- Easton**; post village in Monongalia County on the Baltimore and Ohio Railroad. Altitude, 967 feet.
- East River**; mountain, a ridge extending along boundary line between Mercer County, West Va., and Bland County, Va.
- East River**; station in Mercer County on the Norfolk and Western Railway and on East River.
- East Sewell**; station in Fayette County on the Chesapeake and Ohio Railway and on New River.
- Easy**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.
- Eatons**; post village in Wood County.
- Eby**; post village in Taylor County.
- Echart**; post village in Boone County. Altitude, 1,424 feet.
- Echo**; post village in Wayne County on the Norfolk and Western Railway.
- Eckman**; post village in McDowell County on the Norfolk and Western Railway and on Elkhorn Creek.
- Eden**; post village in Calhoun County.
- Edens**; fork, a small left-hand branch of Right Fork of Twomile Creek, a tributary to Elk River, in Kanawha County.
- Edgar**; post village in Jackson County.
- Edgerton**; post village in Mingo County.
- Edgington**; post village in Brooke County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway. Altitude, 702 feet.
- Edith**; post village in Wyoming County.
- Edmiston**; post village in Lewis County.
- Edmond**; post village in Fayette County.
- Edmonds**; branch, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Edray**; post village in Pocahontas County.
- Edwin**; post village in Webster County.

- Efaw**; knob in Monongalia County.
- Effie**; post village in Wayne County.
- Egeria**; post village in Raleigh County.
- Eggleton**; post village in Putnam County.
- Eglon**; post village in Preston County.
- Egypt**; post village in Wayne County.
- Eighteenmile**; fork, a small right-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Eighteen Mile**; small left-hand tributary to Ohio River in Putnam County.
- Eldora**; post village in Marion County.
- Elgood**; post village in Mercer County. Altitude, 2,870 feet.
- Eli**, post village in Wood County.
- Elijah**; creek, a small right-hand tributary to Big Clear Creek, a branch of Meadow River, in Greenbrier County.
- Eliza**; run, a left-hand tributary of Buffalo Creek in Marion County.
- Elizabeth**; county seat of Wirt County on the Little Kanawha Railroad. Population, 657.
- Elk**; creek, a small branch of Monongahela River in Harrison County.
- Elk**; creek, a small right-hand tributary to Guyandot River in Logan County.
- Elk**; fork, a small right-hand tributary to Pigeon Creek, a branch of Tug Fork of Big Sandy River, in Logan County.
- Elk**; mountain, a ridge between Elk and Holly rivers in Webster County. Elevation, 1,500 to 2,500 feet.
- Elk**; mountain, a short ridge near the head of North Fork of Potomac River.
- Elk**; mountain, a summit in Randolph County. Elevation, 4,000 feet.
- Elk**; mountain, a ridge lying east of Dry Fork of Elk River in Randolph County.
- Elk**; village in Tucker County.
- Elk**; river, a right-hand branch of Kanawha River in Webster, Braxton, Clay, and Kanawha counties.
- Elk**; run, a small right-hand tributary to North Branch of Potomac River in Grant County.
- Elk Garden**; town in Mineral County on the West Virginia Central and Pittsburg Railroad. Altitude, 2,300 feet; population, 581.
- Elkhorn**; creek, a right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Elkhorn**; post village in McDowell County on the Norfolk and Western Railway and on South Fork of Elkhorn Creek. Altitude, 1,885 feet.
- Elkhorn Rock**; summit on South Fork Mountain in Hardy County.
- Elkins**; branch, a very small right-hand tributary to Left Fork of Mud River in Lincoln County.
- Elkins**; branch, a small left-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Elkins**; county seat of Randolph County on the West Virginia Central and Pittsburg Railroad. Population, 2,016.
- Elkins Gap**; triangulation station in Wyoming County. Elevation, 1,944 feet.
- Elk Knob**; post village in Summers County.
- Elklick**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Elklick**; branch, a very small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.
- Elk Lick**; branch, a small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Elk Lick**; left-hand head fork of Laurel Fork of Cheat River in Randolph County.
- Elk Lick**; small left-hand tributary to Oil Creek in Lewis County.

- Elklick**; run, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Elk Trace**; small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan and Wyoming counties.
- Elk Trace**; small right-hand branch of Big Tub Creek, a tributary to Guyandot River, in Wyoming County.
- Elk Twomile**; creek, a left-hand tributary to Elk River in Kanawha County.
- Elk water**; left-hand tributary to Valley River in Randolph County.
- Elkwater**; post village in Randolph County.
- Ella**; post village in Marshall County.
- Elleber**; run, a small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.
- Elleber Ridge**; summit between Elleber Run and Tackey Fork in Pocahontas County. Elevation, 4,000 to 4,500 feet.
- Ellenboro**; post village in Ritchie County.
- Elliot**; post village in Fayette County.
- Ellis**; creek, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Ellis**; creek, a right-hand branch of Sand Fork and tributary to Little Kanawha River in Gilmer County.
- Ellis**; post village in Gilmer County on Ellis Creek.
- Ellison**; post village in Summers County.
- Ellsworth**; post village in Ritchie County.
- Elm**; fork, a left-hand tributary to Buffalo Creek, a branch of Elk River, in Nicholas and Clay counties.
- Elmgrove**; town in Ohio County on the Baltimore and Ohio Railroad. Altitude, 681 feet; population, 768.
- Elmira**; post village in Braxton County.
- Elmo**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 860 feet.
- Elmwood**; post village in Mason County on the Chesapeake and Ohio Railway.
- Eloise**; post village in Wayne County.
- Elton**; post village in Summers County.
- Elverton**; post village in Fayette County.
- Elwell**; post village in Mason County on the Baltimore and Ohio Railroad.
- Ely**; fork, a small left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.
- Emanuel**; hill, a summit in Fayette County. Altitude, 2,360 feet.
- Emma**; post village in Putnam County.
- Emory**; post village in Mineral County.
- Endicott**; post village in Wetzel County.
- England**; run, a small left-hand tributary to Little Kanawha River in Braxton County.
- Ennis**; post village in McDowell County on the Norfolk and Western Railway and on South Fork of Elkhorn Creek. Altitude, 1,990 feet.
- Enoch**; branch, a small left-hand tributary to Gauley River in Nicholas and Webster counties.
- Enoch**; post village in Clay County.
- Enoch**; run, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Enon**; post village in Nicholas County.
- Enterprise**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Entry**; mountain, a summit in Pendleton County.
- Ephraim**; creek, a very small right-hand tributary to New River in Fayette County.



- Erbacon**; post village in Webster County on the Baltimore and Ohio Railroad.
- Erie**; post village in Wayne County on the Baltimore and Ohio Railroad.
- Ernest**; post village in Roane County.
- Etam**; post village in Preston County.
- Ethel**; post village in Boone County.
- Euclid**; post village in Calhoun County.
- Eugene**; post village in Mingo County.
- Eureka**; post village in Pleasants County on the Baltimore and Ohio Railroad.
- Eva**; post village in Ritchie County.
- Evans**; branch, a very small left-hand tributary to Barker Creek, a branch of Guyandot River, in Wyoming County.
- Evans**; fork, a small left-hand branch of Falling Rock Creek, a tributary to Elk River, in Kanawha County.
- Evans**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Evans**; run, a left-hand tributary of Buffalo Creek in Marion County.
- Evansville**; post village in Preston County.
- Evelyn**; post village in Wirt County.
- Everett**; post village in Tyler County.
- Evergreen**; post village in Upshur County.
- Everson**; post village in Marion County on the Baltimore and Ohio Railroad.
- Ewing**; fork, a small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Extra**; post village in Putnam County.
- Extract**; post village in Hampshire County.
- Eye**; post village in Nicholas County.
- Eyes**; run, a small right-hand tributary to Thorn Run of South Branch of Potomac River in Pendleton County.
- Fabius**; post village in Hardy County.
- Faily**; creek, a very small left-hand tributary to New River in Raleigh County.
- Fairfax**; post village in Mingo County on the West Virginia Central and Pittsburgh Railroad.
- Fairfield**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Fairmont**; county seat of Marion County on the Baltimore and Ohio Railroad. Altitude, 888 feet. Population, 5,655.
- Fairplain**; post village in Jackson County.
- Fairview**; village in Hancock County. Population, 407.
- Falkner**; branch, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Fall**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Kanawha and Lincoln counties.
- Fall**; run, a right-hand branch of Little Kanawha River in Braxton County.
- Fall**; run, a small right-hand branch of Back Fork of Holly River in Webster County.
- Fall**; run, a small left-hand branch of Right Fork of Holly River in Braxton County.
- Fallen Timber**; run, a small right-hand tributary to Little Kanawha River in Lewis County.
- Fallen Timber**; short ridge in the western part of Pocahontas County. Elevation, 4,000 feet.
- Falling Rock**; creek, a left-hand tributary to Elk River in Kanawha and Clay counties.
- Falling Spring**; mountain, a short ridge north of Greenbrier River in Greenbrier County. Elevation, 2,500 feet.
- Falling Spring**; post village in Greenbrier County located on Greenbrier River.
- Falling Spring**; run, a small right-hand tributary to Elk River in Randolph County.

**Falling Waters**; post village in Berkeley County on the Cumberland Valley Railroad.

**Fall Rock**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.

**Falls**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Falls**; creek, a small left-hand tributary to Kanawha River in Fayette County.

**Falls**; creek, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.

**Falls**; post village in Grant County.

**Fallsmill**; post village in Braxton County.

**Fanlight**; post village in Wetzel County.

**Far**; post village in Wetzel County.

**Farley**; branch, a small left-hand tributary to Cabin Creek, a branch of Guyandot River, in Wyoming County.

**Farley**; branch, an indirect right-hand tributary to Tommy Creek, a head fork of Guyandot River, in Raleigh County.

**Farley**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.

**Farley**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Farmington**; post village in Marion County on the Baltimore and Ohio Railroad.

**Farnum**; post village in Harrison County.

**Fat**; creek, a small right-hand tributary to Piney Creek, a branch of New River, in Raleigh County.

**Faulkner**; post village in Randolph County on the West Virginia Central and Pittsburgh Railroad.

**Fayette**; county, situated a little south of the central part of the State on the Allegheny Plateau. It is drained by the Kanawha, New, and Gauley rivers. Area, 775 square miles. Population, 31,987—white, 26,130; negro, 5,857; foreign born, 975. County seat, Fayetteville. The mean magnetic declination in 1900 was 1° 30'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 55° to 55°. The county is traversed by the Chesapeake and Ohio and by the Kanawha and Michigan railways.

**Fayette**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 900 feet.

**Fayetteville**; county seat of Fayette County about three miles west of New River. Altitude, 1,750 feet. Population, 413.

**Federal**; post village in Pleasants County.

**Feed Trough**; run, a small right-hand tributary to Birch River in Nicholas County.

**Fellowsville**; post village in Preston County.

**Felt**; run, a small left-hand tributary to Left Fork of Steer Creek in Gilmer County.

**Ferguson**; post village in Wayne County.

**Fern**; creek, a small right-hand tributary to New River in Fayette County.

**Fern**; post village in Pleasants County.

**Ferris**; post village in Fayette County.

**Ferrum**; village in Jefferson County.

**Ferry**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.

**Ferry**; run, a right-hand tributary of Buffalo Creek in Brooke County.

**Festus**; village in Marion County.

**Fetterman**; town in Taylor County on the Baltimore and Ohio Railroad. Altitude, 984 feet. Population, 796.

- Fez**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Fields**; creek, a small left-hand tributary to Kanawha River in Kanawha County.
- Fifteenmile**; creek, a small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Fifteenmile**; fork, a left-hand branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Files**; creek, a right-hand branch of Valley River in Randolph County.
- Finch**; post village in Ritchie County.
- Finlow**; post village in Fayette County.
- Finney**; branch, a small right-hand tributary to Kanawha River in Kanawha County.
- Finster**; post village in Lewis County.
- Fire**; creek, a very small right-hand tributary to New River in Fayette County.
- Firecreek**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,029 feet.
- Fish**; creek, a small left-hand branch of Ohio River in Marshall County.
- Fisher**; fork, a right-hand branch of Rocky Fork of Pocotaligo River, a tributary to Kanawha River, in Kanawha County.
- Fisher Knob**; summit in Braxton County. Elevation, 1,710 feet.
- Fishhook**; fork, a small left-hand tributary to Blake Branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.
- Fishing**; creek, a left-hand branch of Ohio River heading in North and South Forks in Wetzel County.
- Fishing Hawk**; small left-hand tributary to Shavers Fork of Cheat River in Randolph County.
- Fishpot**; run, a right-hand branch of Little Kanawha River in Gilmer County.
- Fitz**; run, a small left-hand tributary to Sand Fork in Lewis County.
- Fitzwater**; branch, a small right-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Fitzwater**; run, a small right-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Five Lick**; run, a small right-hand tributary to Laurel Fork of Cheat River in Randolph County.
- Five Mile**; creek, a small left-hand tributary to East River, a branch of New River, in Mercer County.
- Fivemile**; fork, a left-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Fivemile**; fork, a very small left-hand branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.
- Fivemile**; fork, a small right-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Fivemile**; fork, a small right-hand branch of Cooper Creek, a tributary to Kanawha River, in Kanawha County.
- Fivemile**; post village in Mason County.
- Flag**; run, a small left-hand tributary to Cheat River in Preston County.
- Flaggy Meadow**; run, a right-hand branch of Buffalo Creek in Marion County.
- Flat**; fork, a small right-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Flat**; run, a right-hand branch of Tygart Valley River in Taylor County.
- Flat**; run, a small left-hand branch of Sycamore Creek in Gilmer County.
- Flat**; run, a left-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Flatfork**; post village in Roane County.
- Flatrock**; post village in Mason County.

**Flat Top**; mountain, a ridge in Wyoming, Mercer, Raleigh, and Summers counties. Average altitude, 3,375 feet.

**Flat Top**; mountain, a summit in Monroe County. Altitude, 3,375 feet.

**Flattop**; post village in Mercer County. Altitude, 3,180 feet.

**Flat Top**; summit in Nicholas County.

**Flatwoods**; post village in Braxton County, on the Baltimore and Ohio and the West Virginia Central and Pittsburg railroads. Altitude, 1,223 feet.

**Flatwoods**; run, a small right-hand tributary to Elk River in Braxton County.

**Flaxton**; post village in Mason County.

**Fleming**; fork, a right-hand branch of Buffalo Creek in Marion County.

**Fleming**; run, a small left-hand tributary to Anthony Creek, a branch of Greenbrier River, in Greenbrier County.

**Flemington**; post village in Taylor County on the Baltimore and Ohio Railroad.

**Fleahy**; run, a small right-hand tributary to Little Kanawha River in Braxton County.

**Fletcher**; post village in Jackson County.

**Flinn**; post village in Jackson County.

**Flint**; post village in Doddridge County.

**Flint**; run, a small left-hand branch of The Creek and tributary to Back Fork of Elk River in Randolph County.

**Flint**; run, a small left-hand tributary to Ohio River in Doddridge County.

**Flipping**; creek, a small left-hand tributary to Bluestone River in Mercer County.

**Flippins Ridge**; mountains in Mercer County.

**Floding**; post village in Cabell County.

**Flora**; post village in Barbour County.

**Floyd**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.

**Folsom**; post village in Wetzel County.

**Foltz**; post village in Berkeley County.

**Fonda**; post village in Harrison County.

**Foote**; post village in Mineral County.

**Ford**; post village in Wood County.

**Ford Knob**; summit of Big Sewell Mountain in Fayette County. Altitude, 3,330 feet.

**Ford Knob**; summit in Fayette County. Altitude, 2,860 feet.

**Fore Knobs**; summits in Allegheny Front in Grant County.

**Foresthill**; post village in Summers County.

**Fork**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.

**Fork**; mountain, a short ridge in Webster County.

**Fork**; mountain, a ridge on the south side of Cranberry River, separating it from the headwaters of the Greenbrier.

**Fork**; mountain, a short ridge near the head of Greenbrier River.

**Fork Ridge**; mountains in Mercer County.

**Fork Ridge**; short spur of Middle Fork Mountains.

**Forksburg**; village in Marion County.

**Forks of Capon**; post village in Hampshire County.

**Forks of Little Sandy**; post village in Kanawha County.

**Fort**; branch, a small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.

**Fort Gay**; post village in Wayne County.

**Fort Laurel**; creek, a small right-hand tributary to New River in Fayette County, called Laurel Creek at its mouth.

**Fort Seybert**; post village in Pendleton County.

- Fort Spring**; post village in Greenbrier County on Greenbrier River and on the Chesapeake and Ohio Railway. Altitude, 1,626 feet.
- Forty Weight**; branch, a small head tributary to Laurel Fork, a tributary to Clear Fork of Guyandot River, in Raleigh County.
- Foss**; post village in Summers County.
- Foster**; post village in Boone County.
- Foster Chapel**; post village in Jackson County.
- Fountain Spring**; post village in Wood County.
- Fourmile**; creek, a small left-hand branch of Lens Creek, a tributary to Kanawha River, in Kanawha County.
- Fourmile**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Fourmile**; fork, a very small left-hand branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.
- Fourmile**; fork, a very small left-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Fourmile**; fork, a small left-hand branch of Paint Creek, a tributary to Kanawha River, in Kanawha County.
- Fourmile**; fork, a small right-hand branch of Whiteoak Creek, a tributary to Coal River, in Boone County.
- Fourmile**; fork, a right-hand branch of Cooper Creek, a tributary to Elk River, in Kanawha County.
- Fourmile**; run, a right-hand branch of North Fork of Fishing Creek in Wetzel County.
- Four Pole**; creek, a very small right-hand branch of Tug Fork of Big Sandy River in Mingo County.
- Fourpole**; creek, a small left-hand tributary to Ohio River in Wayne and Cabell counties.
- Fourteen**; post village in Lincoln County.
- Fourteenmile**; creek, a small left-hand branch of Guyandot River, a tributary to Ohio River, in Lincoln County.
- Fowlerknob**; post village in Nicholas County.
- Fox**; post village in Braxton County.
- Fox Knob**; summit in Nicholas County.
- Fox Tree**; run, a small left-hand tributary to Cranberry River in Webster County.
- Frame**; run, a left-hand branch of Strange Creek in Braxton County.
- Frame Knob**; summit in Braxton County. Elevation, 1,563 feet.
- Frametown**; post village in Braxton County.
- Frances**; creek, a small right-hand branch of Kiah Fork, a tributary to Twelvepole Creek, in Wayne County.
- Frank**; branch, a small left-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Clay County.
- Frank**; fork, a very small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Frank**; fork, a very small right-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming and Raleigh counties.
- Frank**; post village in Putnam County.
- Frankford**; town in Greenbrier County. Population, 138.
- Franklin**; branch, a small right-hand branch of Twomile Creek, a tributary to Guyandot River, in Lincoln County.
- Franklin**; county seat of Pendleton County on the Baltimore and Ohio Railroad. Population, 205.
- Frazier**; run, a small left-hand tributary to Cheat River in Preston County.
- Fraziers Bottom**; post village in Putnam County.

**Freed**; post village in Calhoun County.

**Freeman**; post village in Mercer County, on the Norfolk and Western Railway. Altitude, 2,258 feet.

**Freemansburg**; post village in Lewis County.

**Freeport**; post village in Wirt County.

**Freeze**; fork, a head fork of Dingus Run, a tributary to Guyandot River, in Logan County.

**French**; creek, a left-hand branch of Buckhannon River in Upshur County.

**Frenchcreek**; post village in Upshur County.

**Frenchton**; post village in Upshur County.

**Frew**; post village in Tyler County.

**Friarshill**; post village in Greenbrier County.

**Friendly**; town in Tyler County, on the Baltimore and Ohio Railroad. Population, 253.

**Friends**; run, a small left-hand tributary to South Branch of Potomac River in Pendleton County.

**Frisco**; village in Marion County.

**Front Hills**; summits in Grant County.

**Frost**; post village in Pocahontas County.

**Frozen**; branch, a very small left-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.

**Frozenscamp**; post village in Jackson County.

**Fry**; post village in Kanawha County.

**Fudge**; branch, a very small left-hand tributary to Little Sandy Creek, a small branch of Elk River, in Kanawha County.

**Fudger**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Fudges Creek**; post village in Cabell County.

**Fullen**; post village in Monroe County.

**Fulton**; creek, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.

**Fuqua**; creek, a small right-hand branch of Coal River, a tributary to Kanawha River, in Lincoln County.

**Furber**; run, a right-hand branch of Proctor Creek in Wetzel County.

**Furnace**; post village in Mineral County.

**Furnett**; branch, a very small left-hand tributary to Big Ugly Creek, a branch of Guyandot River, in Lincoln County.

**Furnett**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.

**Fury Knob**; summit in Nicholas County.

**Gad**; post village in Nicholas County.

**Gaines**; post village in Upshur County.

**Galfred**; run, a small left-hand branch of Suttleton Creek, a tributary to Greenbrier River, in Pocahontas County.

**Gallatin**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.

**Galletin**; village in Marion County.

**Gandeeville**; post village in Roane County.

**Gandy**; creek, a right-hand head fork of Dry Fork of Cheat River in Randolph County.

**Gandy**; run, a small right-hand tributary to Red Creek in Tucker County.

**Ganotown**; post village in Berkeley County.

**Gap**; mountain in Monroe County.

**Gapmills**; post village in Monroe County.

- Garden Gap**; branch, a very small left-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Garden Ground**; mountain in Fayette County.
- Gardner**; branch, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Garfield**; post village in Jackson County.
- Garland**; fork, a small right-hand tributary to Spruce Fork of Little Coal River in Logan County.
- Garland**; post village in Barbour County.
- Garnet**; post village in Kanawha County.
- Garrett**; creek, a small left-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Garretts Bend**; post village in Lincoln County.
- Garrison**; run, a left-hand branch of Castleman Run in Ohio County.
- Gary**; post village in Webster County on the Norfolk and Western Railway.
- Gashell**; run, a right-hand branch of Little Wheeling Creek in Ohio County.
- Gaston**; post village in Lewis County on the West Virginia Central and Pittsburg Railroad. Altitude 1,040 feet.
- Gate**; fork, a right-hand tributary of Left Fork of Steer Creek in Braxton and Gilmer counties.
- Gates**; post village in Monroe County.
- Gatewood**; branch, a small right-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Gatewood**; post village in Fayette County.
- Gath**; village in Marion County.
- Gauley**; mountain, a ridge in Randolph and Pocahontas counties. Elevation, 4,000 feet.
- Gauley**; mountain, a ridge between Gauley and New rivers, forks of Kanawha River, in Fayette County. Elevation, 1,500 to 2,000 feet.
- Gauley**; river, a right-hand branch of Kanawha River, entering it about 20 miles above Charleston. Length, 109 miles.
- Gauley Bridge**; post village in Fayette County on Gauley River and on the Chesapeake and Ohio Railway.
- Gay**; post village in Jackson County.
- Gay Knob**; summit in Pocahontas County.
- Gazil**; post village in Kanawha County.
- Geho**; post village in Calhoun County.
- Gem**; post village in Braxton County.
- Geneva**; post village in Roane County.
- Genoa**; post village in Wayne County on the Norfolk and Western Railway.
- George**; branch, a small left-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- George**; branch, a small right-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- George**; branch, a very small left-hand tributary to Barker Creek, a branch of Guyandot River, in Wyoming County.
- George**; run, a left-hand tributary of Ohio River in Ohio County.
- Georges**; creek, a small right-hand tributary to Kanawha River in Kanawha County.
- Georgetown**; post village in Monongalia County.
- Georgie**; post village in Wood County.
- German**; post village in Braxton County.
- Gerrardstown**; post village in Berkeley County.
- Get Out**; run, a tributary to Little Kanawha River in Upshur County.
- Giatto**; post village in Mercer County.

**Gibson**; branch, a small right-hand tributary to Fifteenmile Fork of Cabin Creek, a branch of Kanawha River, in Kanawha County.

**Gibson**; post village in Pleasants County on the Norfolk and Western Railway.

**Gibson Knob**; summit in Pocahontas County. Altitude, 4,360 feet.

**Gibsons Mill**; post village in Fayette County.

**Gilbert**; creek, a left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.

**Gilbert**; post village in Mingo County. Altitude, 832 feet.

**Gilboa**; post village in Nicholas County.

**Gilkerson**; post village in Wayne County.

**Gilliam**; post village in McDowell County on the Norfolk and Western Railway.

**Gillespie**; run, a left-hand branch of Middle Wheeling Creek in Ohio County.

**Gilmer**; county situated in the central part of the county, on the Allegheny Plateau.

It is here deeply dissected. It is traversed and drained by Little Kanawha River.

Area, 367 square miles. Population, 11,762—white, 11,726; negro, 36; foreign born, 18. County seat, Glenville. The mean magnetic declination in 1900 was 1° 20'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature, 50° to 55°.

**Girta**; post village in Ritchie County.

**Girty**; run, a left-hand tributary of Ohio River in Brooke County.

**Given**; branch, a very small right-hand tributary to Elk River in Kanawha County.

**Given**; post village in Jackson County.

**Glade**; creek, a left-hand branch of New River in Raleigh County.

**Glade**; creek, a small left-hand branch of Meadow River, a tributary to Gauley River, in Fayette County.

**Glade**; creek, a small left-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.

**Glade**; creek, a small right-hand tributary to New River in Fayette County.

**Glade**; run, a left-hand tributary of Pawpaw Creek in Marion County.

**Glade**; run, a right-hand tributary of Cheat River in Monongalia County.

**Glade**; run, a small right-hand tributary to Blackwater River in Tucker County.

**Glade**; run, a small left-hand branch of Laurel Creek, a tributary to Elk River, in Webster County.

**Glade**; station in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,236 feet.

**Glade farms**; post village in Preston County.

**Gladesville**; post village in Preston County.

**Gladwin**; post village in Tucker County, on the Dry Fork Railroad.

**Glady**; creek, a right-hand branch of Little Kanawha River in Lewis County.

**Glady**; creek, a right-hand branch of Tygarts Valley River in Marion County.

**Glady**; creek, a small right-hand tributary to Laurel Creek, a branch of Valley River, in Barbour County.

**Glady**; fork, a large left-hand branch of Dry Fork, one of the head forks of Cheat River, in Randolph and Tucker counties.

**Glady**; fork, a small left-hand tributary to Right Fork of Stone Coal Creek in Upshur County.

**Glady**; fork, a left-hand tributary to Brush Creek, a branch of Bluestone River, in Mercer County.

**Glady**; post village in Randolph County, on the West Virginia Central and Pittsburg Railway.

**Glass Lick**; small right-hand tributary to Beech Fork of Twelvemile Creek, a branch of Ohio River, in Wayne County.

**Glebe**; post village in Hampshire County.

**Glenalum**; post village in Mingo County on the Norfolk and Western Railway.



- Glencoe**; post village in Greenbrier County.
- Glen Easton**; post village in Marshall County.
- Glen Falls**; post village in Harrison County.
- Glangary**; post village in Berkeley County.
- Glenns**; run, a left-hand branch of Ohio River in Ohio County.
- Glenville**; county seat of Gilmer County on Little Kanawha River. Population, 398. Altitude, 738 feet.
- Glenwood**; post village in Mason County.
- Glomera**; post village in Raleigh County.
- Glover**; branch, a very small right-hand branch of Guyandot River, a branch of Ohio River, in Lincoln County.
- Glovergap**; post village in Marion County on the Baltimore and Ohio Railroad. Altitude, 1,146 feet.
- Gluck**; run, a very small right-hand tributary to Little Kanawha River in Gilmer County.
- Gnat**; run, a small right-hand tributary to Gauley River in Webster County.
- Godby Knob**; summit in Logan County.
- Godfrey**; branch, a small right-hand tributary to Wide Mouth Creek, a branch of Bluestone River, in Mercer County.
- Godfrey**; post village in Mercer County.
- Goffs**; post village in Ritchie County.
- Golden**; post village in Marshall County.
- Goldtown**; post village in Jackson County.
- Gomez**; post village in Calhoun County.
- Goodhope**; post village Harrison County.
- Goodwill**; post village in Mercer County on the Norfolk and Western Railway.
- Goose**; creek, a right-hand branch of Tygarts Valley River in Marion County.
- Goosecreek**; post village in Ritchie County.
- Goose Lick**; left-hand branch of Indian Fork in Lewis County.
- Gooseneck**; post village in Ritchie County.
- Gordon**; post village in Boone County on the Norfolk and Western Railway.
- Gormanania**; post village in Grant County on North Branch of Potomac River and on the West Virginia Central and Pittsburg Railway.
- Gough**; run, a right-hand branch of Potomac River in Morgan County.
- Gould**; post village in Clay County.
- Grace**; post village in Roane County on the Baltimore and Ohio Railroad.
- Grady**; post village in Wood County.
- Grafton**; county seat of Taylor County on the Baltimore and Ohio Railroad. Altitude, 997 feet. Population, 5,650.
- Graham Mines**; post village in Kanawha County.
- Graham Station**; post village in Mason County on the Baltimore and Ohio Railroad.
- Grand Camp**; run, a right-hand branch of French Creek, a tributary to Buckhannon River, in Upshur County.
- Grand Camp**; run, a small right-hand branch of Cedar Creek in Gilmer County.
- Granddaddy**; run, a left-hand branch of Left Fork of Steer Creek in Braxton County.
- Grandstaff**; run, a right-hand branch of Wheeling Creek in Marshall County.
- Grandview**; post village in Raleigh County.
- Grangeville**; village in Marion County.
- Granny**; creek, a right-hand tributary to Elk River in Braxton County.
- Grant**; county, situated in the northeastern part of the State. Its surface consists of a close alternation of ridges and valleys. It is traversed from northeast to northwest by branches of the Potomac, by which it is drained. Area, 483 square miles. Population, 7,275—white, 7,023; negro, 252; foreign born, 95. County

- seat, Petersburg. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $40^{\circ}$  to  $50^{\circ}$ . The county is traversed by the West Virginia Central and Pittsburg Railway.
- Grants**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Grantsville**; county seat of Calhoun County. Population, 225.
- Grape Island**; post village in Pleasants County, on the Baltimore and Ohio Railroad.
- Grapevine**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Grapevine**; branch, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Grapevine**; branch, a right-hand branch of Fourpole Creek in Cabell County.
- Grapevine**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Grapevine**; creek, a small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Grapevine Knob**; summit in Kanawha County.
- Grass**; run, a left-hand branch of Little Kanawha River in Gilmer County.
- Grass**; run, a right-hand branch of Saltlick Creek in Braxton County.
- Grasshopper**; run, a right-hand branch of Potomac River in Morgan County.
- Grassland**; post village in Harrison County.
- Grass Lick**; head fork of left fork of Steer Creek in Braxton County.
- Grassy**; branch, a very small left-hand tributary to Bluestone River in Mercer County.
- Grassy**; creek, a left-hand tributary to Holly River in Webster County.
- Grassy**; creek, a small right-hand branch of Hominy Creek, a tributary to Gauley River, in Nicholas County.
- Grassy**; fork, a left-hand tributary to Big Sycamore Creek, a small branch of Elk River, in Clay County.
- Grassy**; fork, a small left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.
- Grassy**; mountain, a summit west of North Branch of the Potomac in Pendleton County.
- Grassy**; run, a small right-hand tributary to Buckhannon River in Upshur County.
- Grassy**; run, a very small right-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Grassy**; run, a small right-hand branch of Stewart Creek in Gilmer County.
- Grassy**; run, a small left-hand tributary to North River in Hampshire and Hardy counties.
- Grassy**; run, a left-hand branch of Prickett Run in Marion County.
- Grassy Knob**; summit in Greenbrier County. Elevation, 4,391 feet.
- Grassy Meadows**; post village in Greenbrier County.
- Graux**; post village in Roane County.
- Grave**; fork, a small right-hand branch of Slab Fork, a tributary to Guyandot River, in Raleigh County.
- Gravel Lick**; small right-hand branch of Morris Fork of Blue Creek, a tributary to Elk River, in Kanawha County.
- Gray**; run, a right-hand branch of Buffalo Creek in Marion County.
- Gray**; station in Logan County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Graydon**; post village in Fayette County.
- Graysflat**; village in Marion County.
- Gray Sulphur**; springs, situated in Monroe County near Peterstown.
- Graysville**; post village in Marshall County on the Baltimore and Ohio Railroad.

- Great Backbone**; mountain, a narrow ridge in Tucker and Preston counties. Elevation, 2,500 to 3,500 feet.
- Great Cacapon**; post village in Morgan County on the Baltimore and Ohio Railroad.
- Great Flat Top**; mountain, a ridge extending along the boundary lines between McDowell, Wyoming, and Mercer counties.
- Great House**; branch, a very small right-hand tributary to Buffalo Creek, a branch of Elk River, in Clay County.
- Great North**; (*See* Shenandoah Mountains.)
- Green**; branch, a very small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Green**; valley in Stony Ridge, Mercer County.
- Greenbank**; post village in Pocahontas County.
- Green Bay**; branch, a very small right-hand branch of Indian Creek, a tributary to New River, in Monroe County.
- Greenbottom**; post village in Cabell County.
- Greenbrier**; county, situated in the southeastern part of the State. Area, 1,051 square miles. Population, 20,683—white, 18,854; negro, 1,829; foreign born, 121. County seat, Lewisburg. The mean magnetic declination in 1900 was 1° 30'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Chesapeake and Ohio Railway.
- Greenbrier**; creek, a small left-hand branch of West Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Greenbrier**; fork, a small left-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Greenbrier**; mountain, a ridge west of Greenbrier River in Greenbrier County. Elevation, 2,000 to 3,359 feet, the latter being the height of one peak.
- Greenbrier**; post village in Greenbrier County on the Chesapeake and Ohio Railway.
- Greenbrier**; river, a large right-hand branch of New River, entering it at Hinton.
- Greencastle**; post village in Wirt County.
- Greenhill**; post village in Wetzel County.
- Green Knob**; summit near the boundary line of Randolph and Pendleton counties. Elevation, 4,500 feet.
- Greenland**; post village in Grant County, situated on New Creek Mountain. Altitude, 1,443 feet.
- Greenland Gap**; height in New Creek Mountain, Grant County.
- Greenmont**; town in Monongalia County. Population, 349.
- Greens**; branch, a small right-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Greens**; run, a left-hand branch of Buffalo Creek in Brooke County.
- Green Shoal**; branch, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Greenshoal**; post village in Lincoln County.
- Greenspring**; post village in Hampshire County on the Baltimore and Ohio Railroad.
- Green Sulphur Springs**; post village in Summers County.
- Greenville**; post village in Monroe County.
- Greenwood**; post village in Doddridge County on the Baltimore and Ohio Railroad. Altitude, 880 feet.
- Gregg Knob**; summit in the Allegheny Mountains in Randolph County. Altitude, 4,310 feet.
- Greggs**; post village in Ohio County.
- Griffith**; branch, a very small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Griffith**; creek, a small right-hand tributary to Greenbrier River in Summers County.

- Griffithsville**; post village in Lincoln County.
- Grimms Landing**; post village in Mason County.
- Grog**; run, a left-hand branch of Buffalo Creek in Brooke County.
- Groomer**; creek, a small left-hand tributary to Greenbrier River in Summers and Monroe counties.
- Groundhog**; branch, a very small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Grove**; creek, a left-hand branch of Elk River in Clay County.
- Grove**; post village in Doddridge County.
- Gulf**; branch, a small left-hand tributary to Rock Castle Creek, a branch of Guyandot River, in Wyoming County.
- Gunville**; post village in Mason County.
- Guseman**; post village in Preston County.
- Guy**; run, a small right-hand branch of Knapp Creek, a tributary to Greenbrier River, in Pocahontas County.
- Guyandot**; mountain, a ridge of mountains in Raleigh and Wyoming counties.
- Guyandot**; river, a left-hand branch of Ohio River. It turns in the summit of the Allegheny Plateau and flows nearly northwest to its mouth at Huntington. It is navigable for 100 miles.
- Guyandotte**; town in Cabell County on the Baltimore and Ohio and the Chesapeake and Ohio railroads. Altitude, 558 feet. Population, 1,450.
- Guyuses**; run, a right-hand branch of Tygarts Valley River in Marion County.
- Gwin Flats**; narrow summit in Webster County south of Cranberry River.
- Gwinn**; post village in Cabell County.
- Gwins**; run, a small right-hand branch of Laurel Creek, a tributary to Elk River, in Webster County.
- Gypsey**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Hacker Camp**; run, a small left-hand tributary to Little Kanawha River in Lewis County.
- Hacker Valley**; post village in Webster County.
- Haddicks**; run, a small left-hand tributary to Shavers Fork of Cheat River in Tucker and Randolph counties.
- Hagans**; post village in Monongalia County.
- Haggle**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Haines Knob**; summit in the Alleghenies in Randolph County. Altitude, 4,130 feet.
- Hale**; branch, a very small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.
- Hales**; branch, a small left-hand tributary to Five Mile Creek, a branch of East River, in Mercer County.
- Hall**; post village in Barbour County.
- Hall**; run, a right-hand tributary of Middle Wheeling Creek in Ohio County.
- Halleck**; post village in Monongalia County.
- Halls Mills**; post village in Wetzel County.
- Hallsville**; post village in McDowell County located on or near Tug Fork of Big Sandy River.
- Halltown**; post village in Jefferson County on the Baltimore and Ohio Railroad.
- Hambleton**; post village in Tucker County on the West Virginia Central and Pittsburgh Railway.
- Hambleton**; station in Grant County on the West Virginia Central and Pittsburgh Railway and on North Branch of Potomac River.
- Hamilton**; branch, a very small left-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.

- Hamilton**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Fayette County.
- Hamilton**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Hamlin**; county seat of Lincoln County.
- Hammer**; run, a small left-hand tributary to South Branch of Potomac River in Pendleton County.
- Hammick**; fork, a small left-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Hammick Hill**; summit in Kanawha County.
- Hammond**; post village in Marion County on the Baltimore and Ohio Railroad.
- Hammond Ridge**; short spur of Big Ridge in Greenbrier County.
- Hampshire**; county, situated in the northeastern part of the State. It is traversed by Great Cacapon and Little Cacapon rivers and the South Branch of the Potomac. The surface consists mainly of an alternation of ridges and valleys, the former of no great height. The average elevation is not far from 1,000 feet. Area, 662 square miles. Population, 11,806—white, 11,344; negro, 461; foreign born, 51. County seat, Romney. The mean magnetic declination in 1900 was 3° 45'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Baltimore and Ohio Railroad.
- Hamrick Knob**; summit in Webster County.
- Hamrick Ridge**; short spur separating Turkey Creek and Big Run, in Webster County.
- Hancock**; county, situated in the Panhandle, bordering on the Ohio River. Area, 86 square miles. Population, 6,693—white, 6,646; negro, 46; foreign born, 380. County seat, New Cumberland. The mean magnetic declination in 1900 was 3° 5'. The mean annual rainfall is 30 to 40 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Pittsburg, Cincinnati, Chicago and St. Louis Railway.
- Handley**; post village in Kanawha County on the Chesapeake and Ohio Railway. Altitude, 632 feet.
- Haney Hollow**; short right-hand tributary to Kanawha River, in Kanawha County.
- Hanging**; run, a small right-hand tributary to Middle Fork of Tygarts Valley River, in Barbour County.
- Hanging Rock**; branch, a small right-hand tributary to North Fork of Cherry River, in Greenbrier County.
- Hanging Rock**; post village in Hampshire County on the Baltimore and Ohio Railroad.
- Hanging Rock**; summit at the junction of Nicholas, Webster, and Granbury counties.
- Hanging Rock Mills**; post village in Hardy County.
- Hannahsville**; post village in Tucker County.
- Hanover**; post village in Wyoming County.
- Hans**; creek, a small left-hand branch of Indian Creek, a tributary to New River, in Monroe County.
- Hardesty**; post village in Preston County.
- Harding**; post village in Randolph County on the West Virginia Central and Pittsburg Railway.
- Hardman**; fork, a right-hand branch of Grass Run, in Gilmer County.
- Hard Scrabble**; summit at head of North Fork of the Potomac, in Pendleton County. Altitude, 4,500 feet.
- Hardway**; branch, a small left-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.

**Hardy**; county, situated in the northeastern part of the State. It is traversed by Lost River and South Branch of Potomac River. The surface consists of alternation ridges trending northeast and southwest. The elevation ranges from 800 to 3,000 feet. Area, 594 square miles. Population, 8,449—white, 7,992; negro, 457; foreign born, 23. County seat, Moorefield. The mean magnetic declination in 1900 was 3° 15'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°.

**Hardy**; post village in Mercer County.

**Hardy**; run, a small right-hand branch of Wolf Creek, a tributary to Greenbrier River in Monroe County.

**Harewood**; post village in Fayette County on Kanawha River and on the Kanawha and Michigan Railway.

**Harker**; run, a left-hand branch of Long Drain in Wetzel County.

**Harless**; fork, a small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.

**Harman**; branch, a small left-hand tributary to Tug Fork of Big Sandy River, in McDowell County.

**Harman**; post village in Randolph County on the Dry Fork Railroad.

**Harmon**; branch, a small left-hand tributary to East River in Mercer County.

**Harmond**; creek; a small right-hand branch of Pocahontas River, a tributary to Kanawha River, in Putnam County.

**Harper**; branch, a small right-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.

**Harpers Ferry**; town in Jefferson County on the Baltimore and Ohio Railroad; population, 896.

**Harris**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River, in McDowell County.

**Harrison**; county, situated in the northwestern part of the State on the slope of the Alleghany Plateau, and drained northward by the Monongahela River. Area, 431 square miles. Population, 27,690—white, 26,435; negro, 1,252; foreign born, 821; county seat, Clarksburg. The mean magnetic declination in 1900 was 2° 45'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50°. The county is traversed by the Baltimore and Ohio Railroad.

**Harrison**; post village in Clay County on the West Virginia Central and Pittsburgh Railway.

**Harrisville**; county seat of Ritchie County. Population, 472.

**Harrow Knob**; summit in Braxton County; elevation, 1,622 feet.

**Harry**; branch, a very small right-hand tributary to Guyandot River in Mingo County.

**Hart**; post village in Lincoln County on the Baltimore and Ohio Railroad.

**Hartford**; village in Mason County on the Baltimore and Ohio Railroad. Population, 515.

**Hartley**; post village in Ritchie County.

**Hartley**; run, a right-hand branch of Little Fishing Creek in Wetzel County.

**Hartmonsville**; post village in Mineral County.

**Harts**; run, a small left-hand branch of Howards Creek, a tributary to Greenbrier River, in Greenbrier County.

**Harvey**; creek, a right-hand branch of Trace Fork in Putnam and Lincoln counties.

**Harvey**; post village in Raleigh County on the Ohio Central Lines. Altitude, 2,030 feet.

**Harvey**; run, a left-hand branch of Paw Paw Creek in Marion and Monongalia counties.

**Hatcher**; post village in Mercer County.

- Hateful**; creek, a small left-hand tributary to Williams River, in Webster and Pocahontas counties.
- Hatfield**; branch, a small left-hand tributary to Big Cub Creek, a branch of Guyandot River, in Wyoming County.
- Hatfield**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River, a branch of Ohio River, in Logan County.
- Hatfield**; post village in Mingo County.
- Hathaway**; post village in Calhoun County.
- Hawes**; run, a small right-hand tributary to South Fork of Potomac River in Pendleton County.
- Haw Flat**; run, a small right-hand tributary to North Fork of Potomac River in Pendleton County.
- Hawflat Knob**; summit in Randolph County.
- Hawknest**; town in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 827 feet. Population, 109.
- Haw Ridge**; summit at head of Buffalo Fork of Greenbrier River in Pocahontas County.
- Hayden**; post village in Preston County.
- Hayes**; gap in Pendleton County.
- Haymond**; post village in Nicholas County.
- Haynes**; branch, a right-hand branch of Twelvepole Creek in Wayne County.
- Haynes**; post village in Webster County.
- Hays**; creek, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Hazel**; post village in Wetzel County.
- Hazelgreen**; post village in Ritchie County.
- Hazelton**; post village in Preston County.
- Hazy**; gap in Raleigh County.
- Headsville**; post village in Mineral County.
- Heaters**; fork, a branch of Rocky Fork of Ellis Creek in Gilmer County.
- Heaters**; post village in Braxton County on the Baltimore and Ohio Railroad. Altitude, 853 feet.
- Heath**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Hebron**; post village in Pleasants County.
- Hecla**; post village in Raleigh County.
- Hedges**; mountain in Berkeley County. Elevation, 1,100 feet.
- Hedgesville**; post village in Berkeley County. Population, 342.
- Heights**; post village in Mason County.
- Heldreth**; post village in Doddridge County.
- Hell**; run, a small right-hand tributary to Middle Fork of Tygarts Valley River in Barbour and Randolph counties.
- Helvetia**; post village in Randolph County.
- Hemlock**; post village in Upshur County on the Norfolk and Western Railway.
- Hemp Knob**; summit in Wayne County. Altitude, 1,190 feet.
- Hemp Patch**; run, a small left-hand branch of Fall Run, a tributary to Little Kanawha River, in Braxton County.
- Henderson**; village in Mason County on the Baltimore and Ohio Railroad. Population, 304.
- Hendricks**; creek, a small left-hand branch of Meadow River, a tributary to Gauley River, in Fayette County.
- Hendricks**; post village in Tucker County. Population, 317.
- Henrietta**; post village in Calhoun County.

- Henry**; post village in Grant County on the West Virginia Central and Pittsburg Railway. Population, 339.
- Hensley Knob**; triangulation station in McDowell County.
- Herbert**; post village in Wayne County.
- Hereford**; post village in Jackson County.
- Hern**; post village in Mason County.
- Herndon**; post village in Wyoming County.
- Hernshaw**; post village in Kanawha County.
- Herold**; post village in Braxton County.
- Herring**; post village in Preston County.
- Hershaman**; run, a small right-hand branch of Buckeye Fork of Little Skin Creek in Lewis County.
- Hettie**; post village in Braxton County.
- Hevener Knobs**; summits in Pocahontas County.
- Hewett**; creek, a small left-hand branch of Spruce Fork of Little Coal River in Boone and Logan counties.
- Hewett**; post village in Boone County. Altitude, 853 feet.
- Hewitt**; creek, a small right-hand tributary to Little Coal River, a branch of Coal Creek, in Boone County.
- Hibbs**; run, a left-hand tributary of Buffalo Creek in Marion County.
- Hickman**; ridge in Webster County.
- Hickman**; run, a right-hand branch of Monongahela River in Marion County.
- Hickman**; run, a right-hand branch of Fish Creek in Marshall County.
- Hickory**; branch, a very small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Hickory**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Fayette County.
- Hickory**; fork, a small left-hand tributary to Buffalo Creek, a branch of Elk River, in Clay County.
- Hickory**; post village in Mason County.
- Hickory Camp**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Hickory Flat**; run, a small right-hand tributary to Buckhannon River in Upshur County.
- Hickory Knob**; summit in the Allegheny Front on the boundary line between Greenbrier County, W. Va., and Alleghany County, Va. Altitude, 3,357 feet.
- Hickory Knob**; summit in Gilmer County. Altitude, 1,570 feet.
- Hickory Knob**; summit in Kanawha County. Altitude, 1,450 feet.
- Hickory Knob**; summit in Putnam County.
- Hickory Lick**; small left-hand tributary to Greenbrier River in Pocahontas County.
- Hico**; post village in Fayette County.
- Hicumbotom**; post village in Kanawha County.
- Hidden Hollow**; short left-hand tributary to Elk River in Kanawha County.
- Higby**; post village in Roane County.
- Higginbotham**; run, a right-hand branch of Fish Creek in Marshall County.
- Higgins**; run, a right-hand tributary of Potomac River in Berkeley County.
- Higginsville**; post village in Hampshire County.
- High Knob**; one of the southernmost summits of Little Middle Mountain, in the Alleghenies in Randolph County. Altitude, 4,710 feet.
- High Knob**; summit in Braxton County. Altitude, 1,720 feet.
- High Knob**; summit in Nicholas County.
- High Knob**; summit of Mill Creek Mountain in Hardy and Hampshire counties.
- Highland**; mountain ridge in Morgan County. Elevation, 990 feet.



- Highland**; post village in Ritchie County on the Baltimore and Ohio Railroad.
- Highview**; post village in Hampshire County.
- Hill**; creek, a small left-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Hill**; post village in Boone County.
- Hillebert**; post village in Doddridge County.
- Hillsboro**; village in Pocahontas County. Population, 204.
- Hill Top**; town in Fayette County. Population, 263.
- Hinch**; post village in Mingo County.
- Hiner**; post village in Pendleton County.
- Hinkle**; branch, a very small right-hand tributary to Gauley River in Webster and Nicholas counties.
- Hinkle**; post village in Upshur County.
- Hinkleville**; post village in Upshur County.
- Hinton**; county seat of Summers County on the Chesapeake and Ohio Railway. Population, 3,763. Altitude, 1,372 feet.
- Hiram**; post village in Taylor County.
- Hite**; fork, an indirect left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Hoard**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Hodam**; mountain, a broken mountainous ridge in the central part of Webster County. Elevation, 2,000 to 2,500 feet.
- Hodge Knob**; summit of Paint Mountain on the boundary between Raleigh and Fayette counties.
- Hodges**; branch, a left-hand branch of Hurricane Creek in Putnam County.
- Hodges**; post village in Cabell County.
- Hodom**; post village in Webster County.
- Hog**; fork, a small right-hand branch of Tate Creek, a tributary to Elk River, in Braxton County.
- Hog**; run, a left-hand branch of Little Fishing Creek in Wetzel County.
- Hogback**; mountain ridge in Morgan County.
- Hog Camp**; run, a very small left-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Hogg**; post village in Putnam County.
- Hog Hollow**; small branch of Skin Creek, tributary to Monongahela River, in Lewis County.
- Hog Pen**; run, a small right-hand branch of Robinson Fork of Buffalo Creek, a tributary to Elk River, in Nicholas County.
- Hogsett**; post village in Mason County on the Baltimore and Ohio Railroad.
- Hogtan**; run, a left-hand branch of Buffalo Creek in Brooke County.
- Holbrook**; post village in Ritchie County.
- Holcomb**; post village in Nicholas County.
- Hollidays Cove**; post village in Hancock County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway. Altitude, 719 feet.
- Holly**; post village in Braxton County on the Holly River and Addison Railway.
- Holly**; river, a right-hand branch of Elk River in Braxton County.
- Holly Bush**; fork, a very small left-hand branch of Fournile Creek, a tributary to Guyandot River, in Lincoln County.
- Hollygrove**; post village in Upshur County.
- Hollin**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Hollywood**; post village in Monroe County.
- Holman**; post village in Monongalia County.

- Holmes**; branch, a small left-hand branch of the Right Fork of Twomile Creek, a tributary to Kanawha River, in Kanawha County.
- Holmes Knob**; summit in Kanawha County. Altitude, 1,334 feet.
- Holt**; run, a small right-hand branch of Little Kanawha River in Gilmer County.
- Holton**; post village in Morgan County.
- Hominy**; creek, a left-hand tributary to Gauley River in Nicholas and Greenbrier counties.
- Hominyfalls**; post village in Nicholas County.
- Honey**; run, a right-hand branch of Little Fishing Creek in Wetzel County.
- Honey Camp**; branch, a small right-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Honey Camp**; run, a small right-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Upshur County.
- Honey Trace**; creek, a small left-hand branch of Milam Creek, a tributary to East Fork of Twelvepole Creek, in Wayne County.
- Honsocket**; knob in Wetzel County.
- Hoodsville**; village in Marion County.
- Hookersville**; post village in Nicholas County. Altitude, 1,877 feet.
- Hooks Mills**; post village in Hampshire County.
- Hoover**; post village in Braxton County.
- Hope**; post village in Braxton County.
- Hopeville**; post village in Grant County, situated on North Fork of Potomac River.
- Hopkins**; branch, a very small right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Hopkins**; fork, a right-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- Hopkins**; mountain in Greenbrier County. Altitude, 3,356 feet.
- Horner**; fork, a right-hand branch of Big Laurel Creek, a tributary to Elk River, in Clay County.
- Horner**; post village in Lewis County.
- Horner**; run, a left-hand branch of Booths Creek in Harrison County.
- Horse**; branch, a very small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.
- Horse**; creek, a left-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Horse**; creek, a very small left-hand tributary to Guyandot River in Wyoming County.
- Horse**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Horse**; creek, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Horse**; creek, a very small right-hand branch of Paint Creek, a tributary to Kanawha River, in Fayette County.
- Horse**; fork, a small left-hand branch of Falling Rock Creek, a tributary to Elk River, in Kanawha County.
- Horse**; fork, a very small left-hand tributary to New River in Summers County.
- Horse**; mountain ridge in Morgan County.
- Horse Camp**; run, a small right-hand tributary to Dry Fork of Cheat River in Randolph County.
- Horse Mill**; branch, a small right-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Horseneck**; post village in Pleasants County.
- Horsepen**; fork, a left-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.

- Horse Pen**; ridge, mountains in Wyoming and Raleigh counties.
- Horse Ridge**; short spur east of Gauley River in Webster County.
- Horse Ridge**; short, curved spur between Cherry and Cranberry rivers in Nicholas County. Altitude, 2,500 feet.
- Horse Shoe**; run, a right-hand branch of Cheat River in Tucker and Preston counties.
- Horseshoe Run**; post village in Preston County.
- Horton**; post village in Randolph County on the Dry Fork Railroad.
- Hoult**; post village in Marion County on the Baltimore and Ohio Railroad.
- Hound**; fork, a very small left-hand tributary to Guyandot River in Wyoming County.
- House**; branch, a left-hand branch of Wolf Creek, a tributary to New River, in Fayette County.
- House Place**; branch, a very small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Houston**; run, a small left-hand tributary to Elk River in Braxton and Webster counties.
- Hovatter**; post village in Tucker County.
- Howard**; fork, a right-hand branch of Rocky Fork of Pocatalico River, a tributary to Kanawha River, in Kanawha County.
- Howard**; post village in Marshall County on the Chesapeake and Ohio Railway.
- Howards**; creek, a left-hand branch of Greenbrier River in Greenbrier County. It is known locally as Jericho Draft at its head.
- Howards Lick**; left-hand tributary to Lost River in Hardy County.
- Howards Lick**; post village in Hardy County.
- Howell**; fork, a small right-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Upshur County.
- Howell**; post village in Cabell County.
- Howell**; run, a small right-hand tributary to North Branch of Potomac River in Mineral County.
- Howesville**; post village in Preston County on the West Virginia Northern Railroad.
- Hoyt**; post village in Roane County.
- Hubbard**; fork, a small right-hand tributary to Rock Creek, a branch of Little Coal River, in Boone County.
- Hubbardstown**; post village in Wayne County.
- Huddleston**; knob in Cabell County. Elevation, 1,021 feet.
- Hudson**; hollow, in Cabell County.
- Hudson**; post village in Preston County.
- Huey**; run, a right-hand branch of Buffalo Creek in Marion County.
- Huff**; broken mountainous country in Wyoming County, the highest peak reaching an altitude of 2,716 feet.
- Huff**; post village in Randolph County.
- Huff**; run, a right-hand branch of North Fork of Short Creek in Ohio County.
- Huff Knob**; summit of Flat Top Mountain on the boundary line between Mercer and Raleigh counties.
- Huffman**; post village in Barbour County.
- Huggins**; branch, a small right-hand tributary to Big Clear Creek, a branch of Meadow River, in Greenbrier County.
- Hughart**; post village in Greenbrier County.
- Hughes**; creek, a small right-hand tributary to Kanawha River in Kanawha County.
- Hughes**; fork, a small right-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Hughes**; fork, a small right-hand tributary to Skin Creek in Lewis County.

- Hughes**; fork, a right-hand branch of Bell Creek, a tributary to Gauley River, in Kanawha County.
- Hughes**; river, a left-hand tributary to Ohio River, formed by two forks—North and South—in Ritchie and Wirt counties.
- Hughes**; run, a small right-hand tributary to Gauley River in Webster County.
- Hughes Knob**; summit in Lincoln County.
- Hugo**; post village in Putnam County.
- Hukiel**; run, a left-hand branch of Buffalo Run in Brooke County.
- Humphreys**; run, a very small left-hand tributary to Indian Creek a branch of New River, in Monroe County.
- Hundred**; town in Wetzel County on the Baltimore and Ohio Railroad. Population, 261.
- Hungry**; creek, a right-hand branch of Trace Creek in Lincoln County.
- Hunter**; post village in Mingo County.
- Hunters Springs**; post village in Monroe County.
- Huntersville**; post village in Pocahontas County.
- Huntsville**; post village in Jackson County.
- Hungards**; creek, a small right-hand tributary to Greenbrier River in Summers County.
- Hunter**; branch, a small right-hand tributary to Spruce Fork of Little Coal River, a branch of Coal River, in Boone County.
- Hunter**; branch, a small right-hand tributary to North Fork of Cherry River in Nicholas County.
- Hunter Place**; summit in Nicholas County. Altitude, 3,738 feet.
- Hunting**; creek, a small right-hand tributary to Cherry River, a branch of Gauley River, in Nicholas County.
- Hunting Camp**; run, a left-hand tributary to Spruce Run, a small branch of Cheat River, in Preston County.
- Hunting Ground**; broken, mountainous country in Pendleton County west of North Fork of the Potomac.
- Hunting Shirt**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River, in McDowell County.
- Huntington**; county seat of Cabell County on the Baltimore and Ohio Railroad and the Chesapeake and Ohio Railway. Altitude, 567 feet. Population, 11,923.
- Hunt Road**; run, a small left-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Hur**; post village in Calhoun County.
- Hurricane**; branch, a small left-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Hurricane**; branch, a very small left-hand branch of Kiah Fork, a tributary to Twelvepole Creek, in Wayne County.
- Hurricane**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Hurricane**; branch, a very small right-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Hurricane**; branch, a small right-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Hurricane**; creek, a left-hand tributary to Kanawha River in Putnam County.
- Hurricane**; fork, a left-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Hurricane**; village in Putnam County on the Chesapeake and Ohio Railway. Altitude, 687 feet. Population, 240.
- Hurricane Ridge**; mountains in Mercer County.

- Hurst**; post village in Lewis County.
- Husted**; creek, a right-hand tributary of Booths Creek in Taylor County.
- Hutchinson**; post village in Marion County on the Baltimore and Ohio Railroad.
- Hutchison**; branch, a very small right-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Hutton**; run, a small left-hand tributary to South Branch of Potomac River in Hardy County.
- Huttons Knob**; summit of Cheat Mountain in Randolph County. Altitude, 4,200 feet.
- Huttonsville**; post village in Randolph County on the West Virginia Central and Pittsburg Railway.
- Hyar**; run, a small left-hand tributary to Little Kanawha River in Braxton County.
- Hyer**; post village in Braxton County.
- Hypes**; post village in Fayette County.
- Iaeger**; post village in McDowell County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Ida**; post village in Putnam County.
- Ike Lick**; small left-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Nicholas County.
- Imans**; run, a small right-hand branch of South Mill Creek, a tributary to South Branch of Potomac River, in Grant County.
- Imboden**; post village in Fayette County.
- Improvement Lick**; small left-hand tributary to Greenbrier River in Pocahontas County.
- Incline**; post village in McDowell County.
- Independence**; post village in Preston County on the Baltimore and Ohio Railroad. Altitude, 1,156 feet.
- Indian**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.
- Indian**; creek, a left-hand tributary to Guyandot River in Wyoming County. It rises in Indian Ridge.
- Indian**; creek, a small left-hand tributary to Elk River, a large branch of Kanawha River, in Kanawha County.
- Indian**; creek, a right-hand branch of New River in Summers and Monroe counties.
- Indian**; fork, a large left-hand branch of Sand Fork in Gilmer and Lewis counties.
- Indian**; fork, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell and Putnam counties.
- Indian**; gap in Raleigh County caused by Drews Creek.
- Indian**; gap at head of Spice Creek in McDowell County.
- Indian**; triangulation station in Indian Ridge on boundary line between Wyoming and McDowell counties.
- Indiancamp**; post village in Upshur County.
- Indian Camp**; run, a small left-hand tributary to Buckhannon River, in Upshur County.
- Indian Draft**; small right-hand tributary to Greenbrier River in Pocahontas County.
- Indian Draft**; small right-hand branch of Indian Creek, a tributary to New River, in Monroe County.
- Indian Grave**; branch, a small right-hand tributary to Tug River in McDowell County.
- Indian Mills**; post village in Summers County.
- Indian Ridge**; mountains on boundary between Wyoming and McDowell counties.
- Industry**; post village in Calhoun County.
- Inez**; post village in Cabell County on the Chesapeake and Ohio Railway.

**Ingleside**; post village in Mercer County on the Norfolk and Western Railway and on East River. Altitude, 1,945 feet.

**Ingram**; branch, a very small left-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.

**Inkerman**; post village in Hardy County.

**Institute**; post village in Kanawha County.

**Inwood**; post village in Berkeley County on the Cumberland Valley Railroad.

**Iola**; post village in Roane County.

**Ira**; post village in Clay County.

**Ireland**; post village in Lewis County.

**Irewood**; creek, a small left-hand branch of Meadow River, a tributary to Gauley River, in Fayette County.

**Irona**; post village in Preston County.

**Irontown**; post village in Taylor County.

**Isaac**; run, a left-hand branch of Carney Fork of Rock Run in Wetzel County.

**Island**; creek, a small left-hand tributary to New River in Mercer and Summers counties.

**Island**; creek, a small left-hand tributary to Coal Creek, a branch of Kanawha River, in Lincoln County.

**Island**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.

**Islandbranch**; post village in Kanawha County.

**Island Ford**; run, a small left-hand tributary to Greenbrier River, in Pocahontas County.

**Isners**; run, a small right-hand tributary to Valley River in Randolph County.

**Iuka**; post village in Tyler County.

**Ivanhoe**; post village in Upshur County.

**Ivy**; creek, a small left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.

**Ivy**; post village in Upshur County. Altitude, 3,593 feet.

**Ivy Knob**; triangulation station on boundary line between Raleigh and Wyoming counties. Altitude, 3,693 feet.

**Jack**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.

**Jack**; mountain, a short ridge in Pendleton County. Elevation, 3,500 feet.

**Jack**; post village in Webster County.

**Jack**; run, a left-hand branch of Lost Run in Taylor County.

**Jackson**; branch, a very small left-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Jackson**; county, situated in the western part of the State, on the Allegheny Plateau, and bordering on the Ohio River. Area, 455 square miles. Population, 22,987—white, 22,872; negro, 115; foreign born, 91. County seat, Ripley. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Ohio River Railroad.

**Jackson**; fork, a small right-hand branch of Right Fork of Middle Fork of Tygarts Valley River in Upshur and Randolph counties.

**Jackson Ridge**; short spur in Pocahontas County.

**Jacksonville**; post village in Lewis County.

**Jacky**; fork, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.

**Jaco**; post village in Monongalia County.

**Jacob**; fork, a right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

- Jacob Cook**; branch, a very small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Jacox**; post village in Pocahontas County.
- Jacob Knob**; summit in Pocahontas County.
- Jake**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Jake**; run, a small right-hand branch of Ellis Creek in Gilmer County.
- Jake**; run, a left-hand tributary of Wheeling Creek in Marshall County.
- James**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.
- James**; creek, a small right-hand tributary to West Fork, a branch of Pond Fork of Little Coal River, in Boone County.
- James Knob**; summit in Braxton County.
- Janelew**; post village in Lewis County on the West Virginia Central and Pittsburg Railway.
- Jarrell**; branch, a small right-hand tributary to West Fork, a branch of Pond Fork of Little Coal River, in Boone County.
- Jarrett**; branch, a very small right-hand tributary to Kanawha River in Fayette County.
- Jarrett**; post village in Kanawha County.
- Jarrolds Valley**; post village in Raleigh County.
- Jarvisville**; post village in Harrison County.
- Jasper Workman**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Jed**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Jefferson**; county, situated in the northeastern part of the State, limited on the east by Potomac River and the Blue Ridge. With the exception of the slopes of the Blue Ridge its surface is rolling, with an average altitude of about 500 feet. Area, 213 square miles. Population, 15,935—white, 11,994; negro, 3,941; foreign born, 96. County seat, Charlestown. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio and the Norfolk and Western railways.
- Jeffery**; post village in Boone County.
- Jehn**; branch, a small left-hand tributary to Millers Camp Branch, a fork of Marsh Fork of Coal River, in Raleigh County.
- Jenk**; fork, a small left-hand branch of Right Fork of Middle Fork of Tygarts Valley River in Upshur County.
- Jenkins**; fork, a small left-hand branch of Armstrong Creek, a tributary to Kanawha River, in Fayette County.
- Jenke**; post village in Lincoln County.
- Jennie**; creek, a small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Wayne and Logan counties.
- Jenny**; gap in Guyandot Mountain, caused by Skinner Fork, in Raleigh County.
- Jericho**; post village in Hampshire County.
- Jericho Draft**; the name applied locally to the headwaters of Howards Creek, a tributary to Greenbrier River, in Greenbrier County.
- Jerry**; fork, a very small right-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Jerry**; run, a right-hand branch of Simpson Creek in Taylor County.
- Jerrys Run**; post village in Wood County.
- Jersey**; run, a small left-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Webster County.

- Jerseywood**; run, a right-hand tributary to Ellis Creek in Gilmer County.
- Jesse**; post village in Wyoming County.
- Jetsville**; post village in Greenbrier County.
- Jigly**; branch, a small indirect right-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Jim**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Jim**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Jim**; branch, a very small right-hand tributary to Cooney Otter Creek, an indirect left-hand tributary to Guyandot River, in Wyoming County.
- Jim**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Jim**; branch, a very small right-hand tributary to Slab Fork, a branch of Guyandot River, on boundary between Raleigh and Wyoming counties.
- Jimmy**; fork, a right-hand branch of Wilderness Fork of Fork Creek, a tributary to Coal River, in Boone County.
- Jim Spring**; run, a small right-hand tributary to Gauley River in Webster County.
- Jimtown**; post village in Harrison County.
- Job**; post village in Randolph County on the Dry Fork Railroad.
- Job**; run, a right-hand branch of Little Kanawha River in Gilmer County.
- Job Knob**; fork, a small right-hand branch of South Fork of Big Clear Creek, a tributary to Meadow River, in Greenbrier County.
- Job Knob**; summit in Greenbrier County. Altitude, 4,359 feet.
- Joblin**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Joe**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.
- Joe**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Joe**; creek, a head fork of Williams Fork, a tributary to Trace Fork of Mud River, in Lincoln County.
- Joe**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Joe**; fork, a head fork of Right Fork of Steer Creek, in Braxton County.
- Joe**; run, a left-hand branch of Sand Fork in Gilmer County.
- Joe**; run, a right-hand branch of Buffalo Creek in Marion County.
- Joebranch**; post village in Wyoming County.
- Joe Hollow**; short left-hand tributary to Elk River in Kanawha County.
- Joe Knob**; summit in Greenbrier County. Altitude, 3,939 feet.
- Joel**; branch, a very small left-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Joel**; run, a small right-hand tributary to Gauley River in Webster County.
- Joe Ridge**; mountains in Raleigh County.
- Jolithan**; run, a small left-hand tributary to Williams River in Webster County.
- John**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- John**; branch, a very small indirect right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- John**; post village in Monongalia County.
- Johnniecake**; run, a left-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Johnnycake**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.



- John O**; branch, a very small right-hand tributary to Laurel Branch, a tributary to Guyandot River, in Wyoming County.
- Johnson**; fork, a small left-hand branch of Falling Rock Creek, a tributary to Elk River, in Kanawha County.
- Johnson**; fork, a small left-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.
- Johnson**; hollow in Monongalia County.
- Johnson**; post village in Barbour County.
- Johnson**; run, a small right-hand tributary to Gauley River in Webster County.
- Johnson Knob**; summit in Kanawha County. Altitude 2,200 feet.
- Johnsons Crossroads**; post village in Monroe County.
- Johnstown**; post village in Harrison County.
- Jones**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Jones**; fork, a very small right-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Jones**; post village in Putnam County.
- Jones**; run, a very small left-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Jones Springs**; post village in Berkeley County.
- Jordan**; creek, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.
- Jordan**; post village in Kanawha County.
- Jordanrun**; post village in Grant County.
- Joseph Mills**; post village in Tyler County.
- Joshua**; creek, a small left-hand tributary to Greenbrier River in Pocahontas County.
- Joshua**; run, a very small left-hand tributary to New River in Summers County.
- Josiah**; post village in Tyler County.
- Joy**; post village in Doddridge County.
- Joy**; run, a left-hand tributary of North Fork of Dunkard Creek in Monongalia County.
- Jud**; branch, a very small left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Judson**; post village in Summers County.
- Judyton**; post village in Greenbrier County.
- Jule Webb**; fork, a head fork of Horse Creek, a tributary to Little Coal River, in Boone County.
- Julia**; post village in Greenbrier County.
- Jumbo**; post village in Webster County.
- Jump**; branch, a small right-hand tributary to South Fork of Tug River in McDowell County.
- Jumping**; branch, a left-hand tributary to Little Bluestone Creek, a branch of Bluestone River, in Summers County.
- Jumping Branch**; post village in Summers County.
- Jumping Gut**; small left-hand tributary to Elk River in Clay County.
- Junction**; post village in Hampshire County.
- Junior**; town in Barbour County on the West Virginia Central and Pittsburg Railway. Population, 335.
- Kabletown**; post village in Jefferson County.
- Kalamazoo**; post village in Barbour County.
- Kanawha**; county, situated in the western part of the State, on the Allegheny Plateau. It is here deeply dissected. It is traversed by Kanawha River, which, with its branches, the principal of which are Coal Creek and Elk River, drains its area. Area, 872 square miles. Population, 54,696—white, 50,711; negro,

3,983; foreign born, 744. County seat, Charleston. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Charleston, Clendennin and Sutton, the Chesapeake and Ohio, the Ohio Central Lines, and the Kanawha and Michigan railways.

**Kanawha**; fork, a small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.

**Kanawha**; river, a large left-hand branch of Ohio River, heading, under the name of New River, in western North Carolina, and flowing north and northwest to its mouth opposite Gallipolis. Its chief branches are Gauley and Elk rivers, the former joining it at Kanawha Falls and the latter at Charleston. The drainage area, including New River, is 16,690 square miles. Length, 400 miles. Navigable to Kanawha Falls.

**Kanawha**; run, a right-hand branch of Holly River, a tributary to Elk River, in Braxton County.

**Kanawha City**; post village in Kanawha County on the Chesapeake and Ohio Railway.

**Kanawha Falls**; post village in Fayette County on Kanawha River and on the Chesapeake and Ohio and the Ohio Central railroads. Altitude, 865 feet.

**Kanawha Head**; post village in Upshur County.

**Kanawha Station**; post village in Wood County. Altitude, 611 feet.

**Karn**; post village in Monroe County.

**Kasson**; post village in Barbour County.

**Kate Knob**; summit in Lincoln County.

**Kates**; branch, a very small right-hand tributary to Glade Creek, a branch of New River, in Raleigh County.

**Kates**; mountain, a ridge in Greenbrier County. Altitude, 2,500 to 3,000 feet.

**Katly**; village in Marion County.

**Katyslick**; village in Harrison County.

**Kausooth**; post village in Marshall County.

**Kearneysville**; post village in Jefferson County. Altitude, 589 feet.

**Kedron**; post village in Upshur County.

**Keenan**; post village in Monroe County.

**Keenan**; branch, a very small left-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.

**Keeney**; creek, a small right-hand tributary to New River in Fayette County.

**Keeney**; mountain, a ridge in Summers County north of Greenbrier River. Elevation, 2,000 to 3,500 feet.

**Keeney**; creek, a small right-hand tributary to New River in Fayette County.

**Keeney Knob**; summit of Keeney Mountain in Summers County. Altitude, 3,945 feet.

**Kegley**; post village in Mercer County.

**Keith**; fork, a small left-hand tributary to Skin Creek in Lewis County.

**Keith**; post village in Fayette County.

**Keller**; post village in Jefferson County.

**Kelleys**; creek, a small left-hand tributary to Greenbrier River in Summers and Monroe counties.

**Kellogg**; post village in Wayne County on the Chesapeake and Ohio Railway.

**Kelly**; creek, a very small right-hand branch of Pocotaligo River, a tributary to Kanawha River, in Putnam County.

**Kelly**; creek, a right-hand tributary to Kanawha River in Kanawha County.

**Kelly**; post village in Doddridge County.

**Kelley Knob**; summit in Randolph County.

**Kendalia**; post village in Kanawha County.

- Kenna**; post village in Jackson County.
- Kenna Ridge**; mountains in the southwestern part of Braxton County, ranging in elevation from 1,000 to 1,600 feet.
- Kennison**; mountain, a short ridge in the western part of Pocahontas County. Elevation, 3,500 to 4,000 feet.
- Kenova**; village in Wayne County on the Baltimore and Ohio, the Chesapeake and Ohio, and the Norfolk and Western railways. Altitude, 581 feet. Population, 863.
- Kenton**; post village in Doddridge County.
- Kentuck**; fork, a very small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.
- Kentuck**; post village in Jackson County.
- Kerens**; post village in Randolph County on the West Virginia Central and Pittsburgh Railway.
- Kerless Knob**; summit in Greenbrier County. Altitude, 3,441 feet.
- Kern**; run, a small stream in Lewis County.
- Keslers Crosslanes**; post village in Nicholas County.
- Kester**; post village in Roane County.
- Ketterman**; post village in Grant County, located on South Branch of Potomac River.
- Kettle**; post village in Roane County.
- Kettle**; run, a small right-hand branch of Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Kueths**; run, a right-hand branch of Fall Run in Braxton County.
- Kewee**; creek, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Key**; run, a small left-hand tributary to Greenbrier River in Pocahontas County.
- Keyser**; town and county seat of Mineral County on the Baltimore and Ohio and the West Virginia Central and Pittsburgh railroads. Altitude, 802 feet. Population, 2,536.
- Keystone**; town in McDowell County on the Norfolk and Western Railway and on Elkhorn Creek. Population, 1,088.
- Kiah**; fork, a right-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Kiahsville**; post village in Wayne County.
- Kidwell**; post village in Tyler County.
- Kieffer**; post village in Greenbrier County.
- Kile Knob**; summit in Pendleton County.
- Kilgore**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Kimball**; station in McDowell County on the Norfolk and Western Railway and on Elkhorn Creek.
- Kimlin**; run, a left-hand branch of Buffalo Creek in Brooke County.
- Kimsey**; run, a left-hand tributary to Lost River in Hardy County.
- Kincaid**; knob in Marion County.
- Kincaid**; post village in Fayette County.
- Kincaid**; run, a small left-hand tributary to Greenbrier River in Greenbrier County.
- King**; post village in Wetzel County.
- Kings**; run, a small right-hand tributary to Valley River in Randolph County.
- Kingsbury**; post village in Wood County.
- King Shoal**; branch, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Kingsville**; post village in Randolph County.

- Kingwood**; town and county seat of Preston County on the West Virginia Northern Railroad. Altitude, 1,778 feet. Population, 700.
- Kirby**; post village in Hampshire County.
- Kirt**; post village in Barbour County.
- Kline**; gap in New Creek Mountain caused by New Creek in Grant County.
- Kline**; post village in Pendleton County.
- Knapp**; creek, a left-hand tributary to Greenbrier River in Pocahontas County.
- Knawl**; post village in Braxton County.
- Knight**; post village in Doddridge County.
- Knob**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Knob**; fork, a very small right-hand tributary to Clear Fork, a branch of the Guyan-dot River, in Wyoming County.
- Knob**; fork, a left-hand branch of Middle Wheeling Creek in Ohio County.
- Knobley**; post village in Mineral County.
- Knobly**; mountain, a long narrow ridge in Grant and Mineral counties. Altitude, 1,500 feet.
- Knottsville**; post village in Taylor County.
- Knoxville**; post village in Marshall County.
- Kodol**; post village in Wetzel County.
- Krise**; post village in Fayette County.
- Kyger**; post village in Roane County on the Baltimore and Ohio Railroad.
- Kyle**; post village in McDowell County on the Norfolk and Western Railway.
- Lacey**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Laclede**; post village in Cabell County.
- Ladley**; run, a left-hand branch of Middle Wheeling Creek in Ohio County.
- Lahmansville**; post village in Grant County.
- Lake**; post village in Logan County.
- Lambert**; branch, a small left-hand tributary to Pinnacle Creek, a branch of Guyan-dot River, in Wyoming County.
- Lambert**; creek, a very small right-hand branch of West Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Lambert**; branch, a small right-hand tributary to Barker Creek, a branch of Guyan-dot River, in Wyoming County.
- Lamont**; post village in Marshall County.
- Lanark**; post village in Raleigh County.
- Landes**; post village in Grant County.
- Landgraff**; post village in McDowell County on the Norfolk and Western Railway.
- Lane**; post village in Mason County.
- Lanes Bottom**; post village in Webster County.
- Lanham**; post village in Putnam County.
- Lankey**; mountain, a short ridge west of South Branch of Potomac River in Pendleton County.
- Lansing**; post village in Fayette County.
- Lantz**; post village in Barbour County.
- Larew**; post village in Taylor County.
- Larkin Hollow**; right-hand tributary to Kanawha River in Kanawha County.
- Lashmeet**; post village in Mercer County, located near Bluestone River on Delashmeet Creek. Altitude, 2,588 feet.
- Latonia**; post village in Gilmer County.
- Lattimer**; post village in Roane County.
- Launa**; post village in Raleigh County.

- Laurel**; branch, a small left-hand tributary to Marrowbone Creek, a branch of Tug Fork of Big Sandy River, in Logan County.
- Laurel**; branch, a small left-hand tributary to South Fork of Tug River in McDowell County.
- Laurel**; branch, a small left-hand tributary to Bluestone River, a branch of New River, in Mercer County.
- Laurel**; branch, a very small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Laurel**; branch, a small left-hand tributary to Millers Camp Branch, a branch of Marsh Fork of Coal River, in Raleigh County.
- Laurel**; branch, a very small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Laurel**; branch, a left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Laurel**; branch, a left-hand branch of Left Fork of Armstrong Creek, a tributary of Kanawha River, in Fayette County.
- Laurel**; branch, a very small right-hand tributary to Guyandot River in Logan County.
- Laurel**; branch, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Laurel**; branch, a very small right-hand tributary to Bluestone River in Mercer County.
- Laurel**; branch, a small right-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Laurel**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Laurel**; branch, a small right-hand tributary to Hominy Creek, a branch of Gauley River, in Nicholas County.
- Laurel**; branch, a very small right-hand tributary to Powellton Fork of Armstrong Creek, a branch of Kanawha River, in Fayette County.
- Laurel**; creek, a small right-hand tributary to Middle Fork of Tygarts Valley River in Randolph County.
- Laurel**; creek, a left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.
- Laurel**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Laurel**; creek, a left-hand tributary to New River in Fayette County.
- Laurel**; creek, a small left-hand tributary to Greenbrier River in Greenbrier County.
- Laurel**; creek, a small left-hand branch of Knapp Creek, a tributary to Greenbrier River, in Pocahontas County.
- Laurel**; creek, a small left-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Laurel**; creek, a left-hand tributary to Elk River in Braxton and Webster counties.
- Laurel**; creek, a small right-hand tributary to New River in Summers County.
- Laurel**; creek, a small right-hand tributary to Williams River in Pocahontas County.
- Laurel**; creek, a small right-hand tributary to Gauley River in Webster County.
- Laurel**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Laurel**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Laurel**; creek, a right-hand branch of Big Ugly Creek, a tributary to Guyandot River, in Lincoln County.
- Laurel**; creek, a small right-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

- Laurel;** creek, a small right-hand tributary to Gauley River, a large branch of Kanawha River, in Nicholas County.
- Laurel;** creek, a small right-hand branch of Second Creek, a tributary to Greenbrier River, in Monroe County.
- Laurel;** creek, a small right-hand branch of Meadow River, a tributary to Gauley River, in Greenbrier County.
- Laurel;** creek, a small right-hand branch of Brush Creek, a tributary to Bluestone River, in Mercer County.
- Laurel;** creek, a small right-hand tributary to New River in Fayette County.
- Laurel;** creek, a right-hand tributary to Valley River in Barbour County.
- Laurel;** creek, a right-hand tributary to Indian Creek, a branch of New River, in Monroe County.
- Laurel;** fork, a head fork of Holly River in Webster County.
- Laurel;** fork, a head fork of Williams Fork, a branch of Trace Fork of Mud River, in Lincoln County.
- Laurel;** fork, a left-hand branch of Horse Creek, a tributary to Little Coal River, in Lincoln County.
- Laurel;** fork, a small left-hand branch of Big Creek, a tributary to Mud River, in Lincoln County.
- Laurel;** fork, a small left-hand tributary to Elk River in Pocahontas County.
- Laurel;** fork, a small left-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Clay County.
- Laurel;** fork, a small left-hand branch of Big Sycamore Creek, a tributary to Elk River, in Clay County.
- Laurel;** fork, a left-hand branch of Right Fork of Peters Creek, a tributary to Gauley River, in Nicholas County.
- Laurel;** fork, a small left-hand branch of Witchers Creek, a tributary to Kanawha River, in Kanawha County.
- Laurel;** fork, a small left-hand tributary to Long Bottom Creek, a branch of Cabin Creek, in Kanawha County.
- Laurel;** fork, an indirect left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Laurel;** fork, a small left-hand tributary to Right Fork of Steer Creek in Gilmer County.
- Laurel;** fork, a small left-hand branch of Granny Creek in Braxton County.
- Laurel;** fork, a left-hand branch of Grove Creek in Clay County.
- Laurel;** fork, a large left-hand branch of Dry Fork, a head fork of Cheat River, in Randolph County.
- Laurel;** fork, a right-hand branch of Sand Creek, a tributary to Guyandot River, in Lincoln County.
- Laurel;** fork, a small right-hand branch of Little Hart Creek, a tributary to Guyandot River, in Lincoln County.
- Laurel;** fork, a small right-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Laurel;** fork, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Laurel;** fork, a right-hand branch of Bell Creek, a tributary to Gauley River, in Kanawha County.
- Laurel;** fork, a right-hand branch of Coal Fork of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Laurel;** fork, a right-hand branch of Spruce Fork of Little Coal River in Boone and Logan counties.
- Laurel;** fork, a small right-hand tributary to Birch River, a branch of Elk River, in Webster County.

- Laurel**; fork, a right-hand branch of Tanner Fork and tributary to Little Kanawha River in Gilmer County.
- Laurel**; fork, a small right-hand tributary to Pigeon Creek, a branch of Tug Fork of Big Sandy River, in Logan County.
- Laurel**; fork, a right-hand tributary to French Creek in Upshur County.
- Laurel**; hill, a ridge separating Cheat and Valley rivers. Altitude, 3,000 feet.
- Laurel**; hills, a long, narrow ridge in Preston, Barbour, and Tucker counties. Altitude, 2,000 to 2,500 feet.
- Laurel**; post village in Barbour County.
- Laurel**; run, a small left-hand tributary to Little Kanawha River in Upshur County.
- Laurel**; run, a small left-hand tributary to the Middle Fork of Tygarts Valley River in Upshur County.
- Laurel**; run, a small left-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Laurel**; run, a small left-hand tributary to North Fork of Potomac River in Pendleton County.
- Laurel**; run, a small left-hand tributary to Little Kanawha River in Braxton County.
- Laurel**; run, a small left-hand tributary to Meadow Creek in the western part of Greenbrier County.
- Laurel**; run, a small left-hand tributary to Little Birch River in Braxton County.
- Laurel**; run, a small right-hand branch of Duck Creek, a right-hand tributary to Elk River, in Braxton County.
- Laurel**; run, a small right-hand tributary to Dry Fork of Cheat River in Tucker County.
- Laurel**; run, a small right-hand tributary to West Fork of Monongahela River in Lewis County.
- Laurel**; run, a small right-hand tributary to Williams River in Webster County.
- Laurel**; run, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Laurel**; run, a small branch of Youghiogheny River in Preston County.
- Laurel Branch**; post village in Monroe County.
- Laureldale**; post village in Mineral County. Altitude, 1,326 feet.
- Laurel Patch**; run, a right-hand branch of Left Fork of Holly River in Braxton County.
- Lavalette**; post village in Wayne County on the Norfolk and Western Railway.
- Lavender**; fork, a small right-hand tributary to Horse Creek, a branch of Little Coal River, in Boone County.
- Lavinia**; fork, a small left-hand branch of Hopkins Fork of Laurel Creek, tributary to Coal River, in Boone County.
- Lawford**; post village in Ritchie County.
- Lawson**; post village in Raleigh County. Altitude, 1,055 feet.
- Lawton**; post village in Fayette County.
- Laywell**; branch, a right-hand tributary to Trace Fork in Putnam County.
- Lazearville**; post village in Brooke County on the Pennsylvania Railroad.
- Leachtown**; post village in Wood County.
- Leading**; creek, a right-hand branch of Little Kanawha River in Gilmer County.
- Leading**; creek, a small right-hand tributary to Valley River in Randolph County.
- Leading Creek**; post village in Lewis County.
- Leadmine**; post village in Tucker County.
- League**; post village in Ritchie County.
- Leander**; post village in Fayette County.
- Leatherbark**; run, a left-hand branch of Cedar Creek in Gilmer County.
- Leather Bark**; run, a small right-hand tributary to Greenbrier River in Pocahontas County.

**Leatherwood**; creek, a left-hand tributary to Elk River in Clay, Nicholas, and Kanawha counties.

**Leatherwood**; creek, a small right-hand tributary to Guyandot River in Mingo County.

**Leatherwood**; fork, a left-hand tributary to Elk River in Webster County.

**Leatherwood**; town in Ohio County. Population, 123.

**Lecta**; post village in Wirt County.

**Lee**; branch, a very small left-hand tributary to Kanawha River in Fayette County.

**Lee**; creek, a right-hand tributary to Indian Fork of Mud River in Cabell County.

**Lee**; post village in Wirt County.

**Leebell**; post village in Randolph County.

**Leetown**; post village in Jefferson County.

**Leewood**; post village in Kanawha County.

**Lefthand**; post village in Roane County.

**Legg**; post village in Kanawha County.

**Lehew**; post village in Hampshire County.

**Leiter**; post village in Randolph County on the Roaring Creek and Belington Railroad.

**Leivasy**; post village in Nicholas County.

**Lem**; fork, a very small right-hand tributary to Sycamore Creek, a branch of Clear Fork of Coal River, in Raleigh County.

**Lenox**; post village in Preston County.

**Lens**; creek, a left-hand tributary to Kanawha River in Kanawha County.

**Leo**; post village in Roane County.

**Leon**; village in Mason County on the Ohio Central Lines. Population, 250.

**Leonard**; fork, a small left-hand tributary to Right Fork of Middle Fork of Tygarts Valley River in Upshur County.

**Leonard**; post village in Greenbrier County.

**Leopard**; run, a small right-hand tributary to Left Fork of Steer Creek in Braxton County.

**Leopold**; post village in Doddridge County.

**Lerona**; post village in Mercer County.

**Leroy**; post village in Jackson County on the Baltimore and Ohio Railroad.

**Lesage**; post village in Cabell County on the Baltimore and Ohio Railroad.

**Leslie**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Lester**; post village in Raleigh County.

**Letart**; post village in Mason County on the Baltimore and Ohio Railroad.

**Letch**; post village in Braxton County.

**Letherbark**; post village in Calhoun County.

**Lettergap**; post village in Gilmer County.

**Levels**; post village in Hampshire County.

**Levissee**; creek, a right-hand branch of Wolf Creek, a tributary to New River, in Fayette County.

**Lewis**; county, situated in the central part of the State, on the Allegheny Plateau, drained northward by tributaries of the Monongahela. Area, 414 square miles. Population, 16,980—white, 16,792; negro, 178; foreign born, 265. County seat, Weston. The mean magnetic declination in 1900 was 2° 45'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.

**Lewis**; fork, a very small left-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.

**Lewis**; post village in Harrison County.

**Lewis**; run, a small right-hand tributary to Tygarts Valley River, in Barbour County.



- Lewisburg**; county seat of Greenbrier County. Population, 872.
- Lewis Queen**; branch, a small left-hand branch of Kiah Fork, a tributary to Twelvepole Creek, in Wayne County.
- Lewiston**; post village in Kanawha County.
- Liberty**; post village in Putnam County.
- Lick**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Lick**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Lick**; branch, a small left-hand tributary to Fourteenmile Creek, a branch of Guyandot River, in Lincoln County.
- Lick**; branch, a left-hand branch of Open Fork of Bell Creek, a tributary to Gauley River, in Nicholas County.
- Lick**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Lick**; branch, a very small left-hand tributary to Brier Creek, a branch of Coal River, in Kanawha County.
- Lick**; branch, a small right-hand branch of Little Sandy Creek, a tributary to Elk River, in Kanawha County.
- Lick**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Lick**; branch, a small right-hand tributary to Pond Fork of Little Coal River in Boone County.
- Lick**; branch, a small right-hand tributary to Cranberry River in Webster County.
- Lick**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Lick**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Lick**; branch, a very small right-hand tributary to Bluestone River in Mercer County.
- Lick**; branch, a very small right-hand tributary to North Fork of Elkhorn Creek in McDowell County.
- Lick**; branch, a very small right-hand tributary to South Fork of Elkhorn Creek in McDowell County.
- Lick**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Lick**; creek, a small left-hand tributary to Laurel Creek in Braxton County.
- Lick**; creek, a small left-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Lick**; creek, a small left-hand tributary to New River in Mercer and Summers counties.
- Lick**; creek, a small right-hand tributary to Trace Fork of Mud River, a branch of Guyandot River, in Putnam County.
- Lick**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Lick**; creek, a small right-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Lick**; creek, a small right-hand tributary to New River in Summers County.
- Lick**; fork, a very small left-hand tributary to Clear Fork of Coal River in Raleigh County.
- Lick**; fork, a left-hand tributary to Grass Run in Gilmer County.
- Lick**; fork, a small right-hand branch of Mossy Creek, a tributary to Paint Creek, in Fayette County.
- Lick**; fork, a small right-hand tributary to Steer Run in Gilmer County.

- Lick**; mountain, a short spur in Greenbrier County.
- Lick**; run, a small left-hand tributary to Cheat River, in Preston County.
- Lick**; run, a small right-hand tributary to Left Fork of Right Fork of Buckhannon River in Randolph County.
- Lick**; run, a right-hand tributary to South Fork of Potomac River in Pendleton County.
- Lick Hollow**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Lick Hollow**; creek, a small right-hand tributary to Little Creek, a branch of Anthonys Creek, in Greenbrier County.
- Licking**; creek, a small left-hand tributary to Cheat River in Tucker County.
- Lick Knob**; triangulation station situated on Paint Mountain, on boundary line between Raleigh and Fayette counties. Altitude, 3,268 feet.
- Licklog**; branch, a very small right-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Lightburn**; post village in Lewis County.
- Lile**; post village in Greenbrier County.
- Lilly**; branch, a small left-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.
- Lilly**; fork, a left-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Lilly**; post village in Summers County.
- Lillydale**; post village in Monroe County.
- Lima**; post village in Tyler County.
- Limestone**; branch, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Limestone**; mountain, a short ridge in Tucker County. Altitude, 1,500 to 3,000 feet.
- Limestone**; post village in Marshall County.
- Limestone**; run, a small right-hand tributary to O'Brien Fork in Braxton County.
- Lincoln**; county, situated in the western part of the State on the lower slopes of the Allegheny Plateau and drained by tributaries of Guyandot River. Area, 441 square miles. Population, 15,434—white, 15,371; negro, 63; foreign born, 7. County seat, Hamlin. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°.
- Lincoln**; post village in Wyoming County.
- Linden**; post village in Roane County.
- Lindside**; post village in Monroe County.
- Line**; creek, a small right-hand branch of Peters Creek, a tributary to Gauley River, in Nicholas County.
- Link**; post village in Braxton County.
- Linn**; post village in Gilmer County.
- Linwood**; post village in Pocahontas County.
- Lisle**; branch, a left-hand branch of Guyandot River in Cabell County.
- Little**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Little**; creek, a small left-hand branch of Slaughter Creek, a tributary to Kanawha River, in Kanawha County.
- Little**; creek, a left-hand tributary to Island Creek, a branch of Guyandot River, in Logan County.
- Little**; creek, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.

- Little**; creek, a right-hand branch of Anthony Creek, a tributary to Greenbrier River, in Greenbrier County.
- Little**; creek, a right-hand branch of North Fork of Tug River in McDowell County.
- Little**; fork, a small left-hand branch of Meadow Creek, a tributary to Meadow River, in Greenbrier County.
- Little**; fork, a small left-hand tributary to Williams River in Webster County.
- Little**; fork, a small right-hand tributary to South Fork of Potomac River in Pendleton County.
- Little**; fork, a very small right-hand tributary to South Fork of Elkhorn Creek, in McDowell and Mercer counties.
- Little**; mountain, a short ridge in Monroe County. Altitude, 2,500 feet.
- Little**; mountain, a short ridge between North Fork of Greenbrier River and Greenbrier River in Pocahontas County. Altitude, 3,000 feet.
- Little**; mountain, a ridge in Monroe County.
- Little**; mountain, a short spur of Big Mountain, west of South Branch of Potomac River, in Pendleton County.
- Little**; mountain, a short spur of New Creek Mountains in Grant County. Altitude, 1,500 to 2,000 feet.
- Little**; mountain, a short ridge in Monroe County. Altitude, 2,000 feet.
- Little**; post village in Tyler County.
- Little**; river, a left-hand tributary to East Fork of Greenbrier River in Pocahontas County.
- Little**; river, a small left-hand branch of West Fork of Greenbrier River in Randolph County.
- Little Beaver**; creek, a right-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Little Beech**; mountain, a short ridge east of Shavers Mountain, between East and West forks of Gladly Fork, in Randolph County.
- Little Beech Knob**; summit in Greenbrier County.
- Little Beechy**; creek, a very small left-hand tributary to Elk River in Clay County.
- Little Beechy**; run, a small left-hand tributary to Williams River in Webster County.
- Littlebirch**; post village in Braxton County.
- Little Birch**; river, a right-hand branch of Birch River in Braxton and Webster counties.
- Little Black**; fork, a small right-hand tributary to Shavers Fork of Cheat River in Randolph County.
- Little Blackwater**; river, a small right-hand branch of Blackwater River in Tucker County.
- Little Bluestone**; creek, a small left-hand tributary to Bluestone River, a branch of New River, in Summers County.
- Little Brier**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Little Briery Knob**; summit in Nicholas County.
- Little Buffalo**; creek, a small left-hand tributary to Elk River in Braxton County.
- Little Buffalo**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Little Buffalo**; creek, a left-hand branch of Big Buffalo River in Preston County.
- Little Cabell**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Little Cacapon**; river, a left-hand tributary to North Branch of Potomac River in Hampshire County.
- Little Clear**; creek, a right-hand branch of Meadow River in Greenbrier County.

- Little Clear Creek**; mountain, a ridge between Big Clear Creek and Little Clear Creek in Greenbrier County.
- Little Coal**; run, a large left-hand branch of Coal River, a tributary to Kanawha River, in Lincoln and Boone counties.
- Little Crooked**; run, a small left-hand tributary to Cedar Creek in Gilmer County.
- Little Cub**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Little Cub**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Wyoming County.
- Little Day Camp**; branch, a small right-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Little Dents**; run, a left-hand tributary of Buffalo Creek in Marion County.
- Little Devil**; creek, a small right-hand tributary to Second Creek, a branch of Greenbrier River, in Monroe County.
- Little Dry**; run, a small right-hand tributary to Left Fork of Buckhannon River in Randolph County.
- Little Dunkard Mill**; creek, a left-hand tributary to Buffalo Creek.
- Little Elk**; creek, a small right-hand tributary to Gauley River, a large branch of Kanawha River in Nicholas County.
- Little Ellis**; creek, a left-hand branch of Ellis Creek in Gilmer County.
- Littlefalls**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Little Fishing**; creek, a small left-hand branch of Ohio River in Wetzel County.
- Little Fudger**; creek, a right-hand branch of Fudger Creek, a tributary to Mud River, in Cabell County.
- Little Gauley**; mountains, a long, narrow, broken ridge in Kanawha and Fayette counties. Altitude 1,500 feet.
- Little Hart**; creek, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Little Hewitt**; creek, a very small right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Little High Knob**; summit in Pocahontas County.
- Little Horse**; creek, a small left-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Little Huff**; creek, a left-hand tributary to Guyandot River, a branch of Ohio River, in Wyoming County.
- Little Hurricane**; creek, a small left-hand tributary to Kanawha River in Putnam County.
- Little Indian**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Little Jarrell**; fork, a small left-hand branch of Big Jarrell Fork, a tributary to Hopkins Fork of Coal River, in Boone County.
- Little Jenny**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Little Jonathan**; run, a small left-hand tributary to Cheat River in Tucker County.
- Little Kanawha**; river, a left-hand branch of Ohio River, rising in Upshur County and flowing northwest through Calhoun, Wirt, and Wood counties. It is navigable to Glenville.
- Little Knob**; summit in Greenbrier County.
- Little Laurel**; creek, a small left-hand tributary to Cherry River, a branch of Gauley River, in Nicholas and Greenbrier counties.
- Little Laurel**; creek, a small right-hand branch of Laurel Creek, a tributary to Coal River, in Boone County.
- Little Laurel**; creek, a small right-hand branch of Kiah Fork of Twelvepole Creek in Wayne County.

- Little Laurel**; creek, a small right-hand tributary to Williams River in Pocahontas County.
- Little Laurel**; creek, an indirect right-hand tributary to Hominy Creek, a branch of Gauley River, in Nicholas County.
- Little Laurel**; creek, a very small right-hand tributary to Brush Creek, a branch of Bluestone River, in Mercer County.
- Little Laurel**; run, a left-hand branch of Buffalo Creek in Marion County.
- Little Laurel**; run, a very small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Little Laurel**; run, a left-hand tributary to Fish Creek in Wetzel and Marshall counties.
- Little Locust Knob**; summit in Webster County.
- Little Lynn**; creek, a small right-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Little Marsh**; fork, a small right-hand branch of Marsh Fork, the left-hand head fork of Coal River, in Raleigh County.
- Little Middle**; mountain, a short ridge between Gandy Creek and Dry Fork of Cheat River in Randolph County.
- Little Milam**; creek, a small right-hand branch of Milam Creek, a tributary to East Fork of Twelvepole Creek, in Wayne County.
- Little Mod**; run, a right-hand branch of Buffalo Creek in Marion County.
- Little Naul**; creek, a left-hand branch of Naul Creek in Braxton County.
- Little Ninemile**; fork, a small left-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Little Otter**; creek, a small right-hand branch of Elk River in Braxton County.
- Littleotter**; post village in Braxton County.
- Little Paw Paw**; creek, left-hand tributary to Monongahela River, in Mineral County.
- Little Ridge**; short range of mountains in Greenbrier County.
- Little Right**; fork, a very small left-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Little Rush**; run, a right-hand tributary to Fish Creek in Wetzel County.
- Little Sand**; run, a small right-hand tributary to Buckhannon River in Upshur County.
- Little Sandy**; creek, a small right-hand branch of Elk River in Kanawha County.
- Little Sandy**; creek, a right-hand branch of Big Sandy Creek in Preston County.
- Littlesburg**; post village in Mercer County.
- Little Sevenmile**; creek, a small left-hand branch of Sevenmile Creek, a tributary to Ohio River, in Cabell County.
- Little Sewell**; creek, a small left-hand tributary to Meadow River in Greenbrier County.
- Little Sewell**; mountain, a short broken mountainous country in the western part of Greenbrier County. Altitude, 3,000 feet.
- Little Sewell Mountain**; post village in Greenbrier County.
- Little Skin**; creek, a right-hand branch of Skin Creek in Lewis County.
- Little Slate**; creek, a left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Little Spruce**; summit in Pocahontas County.
- Little Spruce Knob**; summit in Pocahontas County. Altitude, 4,360 feet.
- Little Staunch**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Little Stony**; creek, a very small left-hand tributary to New River in Fayette County.

**Little Sugar**; creek, a right-hand branch of Sugar Creek, a tributary to Back Fork of Elk River, in Webster and Randolph counties.

**Little Sycamore**; creek, a very small left-hand tributary to Elk River in Clay County.

**Little Twomile**; creek, a right-hand branch of Mud River in Cabell County.

**Little Ten Mile**; creek, a small left-hand tributary to Monongahela River in Harrison County.

**Littleton**; town in Wetzel County on the Baltimore and Ohio Railroad. Altitude, 930 feet. Population, 509.

**Little Twomile**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Little Ugly**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.

**Little Wheeling**; creek, a right-hand branch of Wheeling Creek in Ohio County.

**Little Whetstone**; run, a right-hand tributary of Buffalo Creek in Marion County.

**Little Whiteoak**; creek, a small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.

**Little Whiteoak**; creek, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.

**Little Whitestick**; creek, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.

**Little Wolf**; creek, a small right-hand tributary to Cheat River in Preston County.

**Liverpool**; post village in Jackson County on the Baltimore and Ohio Railroad.

**Lizard**; branch, a very small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.

**Lizemores**; post village in Clay County.

**Lizzie**; post village in Jackson County.

**Llewellyn**; run, a left-hand tributary of Pyles Fork of Buffalo Creek in Marion County.

**Lloyd**; post village in Randolph County on the Baltimore and Ohio Railroad.

**Lloydsville**; post village in Braxton County.

**Lobelia**; post village in Pocahontas County.

**Locke**; post village in Tyler County.

**Lockhart**; post village in Jackson County.

**Lockharts Run**; post village in Wood County.

**Lockney**; post village in Gilmer County.

**Lock Seven**; post village in Kanawha County on the Ohio Central Lines.

**Lockwood**; post village in Nicholas County.

**Locust**; fork, a left-hand fork of Fork Creek, a tributary to Coal River, in Boone County.

**Locust**; post village in Pocahontas County.

**Locust Knob**; summit in Clay County. Altitude, 1,500 feet.

**Locust Knob**; summit in Pocahontas County. Altitude, 4,392 feet.

**Locust Stump Knob**; summit in Braxton County. Altitude, 1,690 feet.

**Log**; run, a right-hand branch of Sinking Creek, a tributary to Little Kanawha River, in Gilmer County.

**Logan**; county, situated in the southwestern part of the State, on the Allegheny Plateau. It is here deeply dissected, the surface being an alternation of narrow, sharp ridges and deep, narrow valleys. It is drained by Tug Fork of Big Sandy and Guyandot rivers. Area, 494 square miles. Population, 6,955—white, 6,894; negro, 61; foreign born, 8. County seat, Logan. The mean magnetic declination in 1900 was 45'. The mean annual rainfall is 50 inches, and the mean annual temperature 50° to 55°.

**Logan**; county seat of Logan County on the Chesapeake and Ohio Railway.

- Logan**; fork, a small right-hand branch of Hopkins Fork of Laurel Creek, a tributary to Coal River, in Boone County.
- Logan**; run, a very small right-hand tributary to Valley River in Randolph County.
- Logansport**; village in Marion County.
- Loned cedar**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Lonetree**; post village in Tyler County. Altitude, 3,570 feet.
- Lone Tree**; summit of Rich Mountain in Randolph County. Altitude, 3,570 feet.
- Long**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.
- Long**; branch, a left-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Long**; branch, a small left-hand tributary to Middle Fork of Davis Creek, a branch of Kanawha River, in Kanawha County.
- Long**; branch, a small left-hand branch of Sandlick Fork of Laurel Creek, a tributary to Coal River, in Boone County.
- Long**; branch, an indirect right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Long**; branch, a small right-hand tributary to Fifteen-mile Fork of Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Long**; branch, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Long**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Long**; branch, a small right-hand tributary to Big Clear Creek, a branch of Meadow River, in Greenbrier County.
- Long**; branch, a small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Long**; branch, a left-hand tributary of Guyandot River in Lincoln County.
- Long**; branch, a very small right-hand tributary to Mill Creek, a branch of Mud River, in Cabell County.
- Long**; fork, a left-hand branch of Laurel Patch Run in Braxton County.
- Long**; post village in Randolph County.
- Long**; run, a very small left-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Long**; run, a left-hand branch of Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Long**; run, a small left-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Webster County.
- Long**; run, a small left-hand tributary to Cheat River in Tucker and Preston counties.
- Long**; run, a small left-hand branch of Pritchett Creek in Marion County.
- Long**; run, a small right-hand tributary to Birch River in Braxton County.
- Long**; run, a left-hand branch of Berkeley Run in Taylor County.
- Long**; run, a very small right-hand tributary to Left Fork of Buckhannon River in Randolph County.
- Longacre**; post village in Fayette County on the Ohio Central Lines.
- Long Bottom**; creek, a small left-hand branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Longdale**; post village in Mason County on the Baltimore and Ohio Railroad.
- Long Drain**; left-hand branch of Fish Creek in Wetzel County.
- Long Knob**; summit in Braxton County. Altitude, 1,510 feet.
- Long Lick**; branch, a very small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Wyoming County.
- Long Lick**; left-hand branch of Cedar Creek in Gilmer County.

- Long Pole**; creek, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Longreach**; post village in Tyler County on the Baltimore and Ohio Railroad.
- Long Ridge**; short range between North and South branches of the Potomac in Pendleton County.
- Longrun**; post village in Doddridge County on the Baltimore and Ohio Railroad.
- Long Run Hill**; summit in Randolph County.
- Longs**; run, a left-hand branch of Castleman Run in Ohio and Brooke counties.
- Long Shoal**; branch, a very small right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Long Shoal**; run, a small right-hand tributary to Little Kanawha River.
- Longs Ridge**; short spur between Turkey and Longs runs, small left-hand branches of Elk River, in Clay County.
- Lookout**; post village in Fayette County.
- Looneyville**; post village in Roane County.
- Loop**; branch, a very small right-hand tributary to North Fork of Elkhorn Creek in McDowell County.
- Loop**; branch, a very small right-hand tributary to Tug River in McDowell County.
- Loop**; creek, a right-hand tributary to Kanawha River in Fayette County.
- Lorentz**; post village in Upshur County on the Baltimore and Ohio Railroad.
- Lorton Lick**; creek, a small right-hand tributary to Bluestone River in Mercer County.
- Lost**; branch, a very small right-hand tributary to Guyandot River in Mingo and Wyoming counties.
- Lost**; river, a head branch of Cacapon River, rising in Hardy County and flowing northeast into the Potomac.
- Lost**; run, a small left-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Lost**; run, a right-hand branch of Fish Creek in Wetzel County.
- Lost**; run, a small right-hand branch of Laurel Creek, a tributary to Elk River, in Webster County.
- Lost City**; post village in Hardy County.
- Lostcreek**; post village in Harrison County on the Baltimore and Ohio Railroad. Altitude, 1,013 feet.
- Lost Flat**; broad summit in Greenbrier County.
- Lost River**; post village in Hardy County.
- Lot**; post village in Wetzel County.
- Lotta**; post village in Wirt County.
- Loudenville**; post village in Marshall County on the Baltimore and Ohio Railroad.
- Loudin**; post village in Randolph County.
- Louise**; post village in Pocahontas County.
- Lousecamp**; run, a small left-hand tributary to Cheat River in Tucker County.
- Louther**; post village in Jackson County.
- Loveberry**; run, a right-hand branch of Sand Fork in Lewis County.
- Loveridge**; post village in Greenbrier County.
- Lowdell**; post village in Wood County.
- Lowell**; branch, a very small right-hand branch of Indian Creek, a tributary to New River, in Monroe and Summers counties.
- Lowell**; post village in Summers County on the Chesapeake and Ohio Railway. Altitude, 1,512 feet.
- Lower**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Lower**; gap in Wyoming County.
- Lower**; mountain, a summit in Pocahontas County.



- Lower;** run, a very small right-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Lower;** run, a right-hand branch of South Fork of Fishing Creek in Wetzel County.
- Lower Big;** run, a right-hand branch of Leading Creek in Gilmer County.
- Lower Big;** run, a small right-hand tributary to Holly River in Webster County.
- Lower Birch;** run, a very small left-hand tributary to Elk River in Clay County.
- Lower Bull;** run, a right-hand tributary to Cedar Creek in Gilmer County.
- Lower Cove;** head waters of Lost River in Hardy County.
- Lower Frame;** run, a small left-hand tributary to Elk River in Clay County.
- Lower Gap;** branch, a small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Wyoming County.
- Lower Hensley;** creek, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Low Gap;** branch, a small right-hand tributary to Little Marsh Fork, a branch of Coal River, in Raleigh County.
- Low Gap;** branch, a small right-hand tributary to Slab Fork, a branch of Guyandot River, in Raleigh County.
- Low Gap;** creek, a small left-hand tributary to Spruce Fork of Little Coal River, a branch of Coal River, in Boone County.
- Lower Level;** run, a left-hand branch of Cedar Creek in Gilmer County.
- Lower Lick;** small left-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Lower Pond Lick;** small left-hand tributary to Shavers Fork of Cheat River in Randolph County.
- Lower Road;** branch, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Lower Rock Camp;** run, a small right-hand tributary to Elk River in Braxton County.
- Lower Shannon;** branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Lower Shant;** run, a small right-hand tributary to Back Fork of Elk River in Randolph County.
- Lower Shaver;** run, a small right-hand tributary to Left Fork of Steer Creek in Braxton County.
- Lower Sleith;** fork, a left-hand branch of Right Fork of Steer Creek in Braxton County.
- Lower Sturgeon;** branch, a small right-hand tributary to Big Cub Creek, a branch of Guyandot River, in Wyoming County.
- Lower Threemile;** fork, a small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Lower Tony Camp;** run, a small right-hand tributary to Dry Fork of Cheat River in Randolph County.
- Lower Two;** run, a small left-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Lower Two;** run, a small left-hand tributary to Cedar Creek in Gilmer County.
- Lowman;** post village in Wetzel County.
- Lowsville;** post village in Monongalia County.
- Lubeck;** post village in Wood County.
- Lucerne;** post village in Gilmer County.
- Lucile;** post village in Wirt County.
- Lukey;** fork, a small left-hand tributary to head of Mud River, a branch of Guyandot River, in Boone County.
- Lumberport;** post village in Harrison County on the Baltimore and Ohio Railroad.

**Lunice**; creek, a small left-hand tributary to South Branch of Potomac River in Grant County.

**Luray**; post village in Pendleton County.

**Lurd**; post village in Kanawha County.

**Luzon**; post village in Tyler County.

**Lydia**; post village in Clay County.

**Lykins**; creek, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.

**Lynch**; post village in Harrison County on the Norfolk and Western Railway.

**Lynch**; run, a very small right-hand tributary to Little Kanawha River in Gilmer County.

**Lynn**; creek, a very small left-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Lynncamp**; post village in Marshall County.

**Lynn Camp**; run, a small left-hand tributary to Little Kanawha River in Upshur County.

**Lynn Camp**; run, a left-hand branch of Fish Creek in Wetzel and Marshall counties.

**Lynn Camp**; run, a very small left-hand tributary to Gauley River in Webster County.

**Lynncamp**; run, a right-hand tributary of Left Fork of Steer Creek in Gilmer County.

**Lynn Knob**; summit in Randolph County.

**Lyon**; post village in Doddridge County.

**Lyns**; branch, a right-hand branch of Buch Fork of Twelvepole Creek in Wayne and Cabell counties.

**Lytton**; post village in Pleasants County on the Baltimore and Ohio Railroad.

**Mabie**; post village in Randolph County, on the Roaring Creek and Charleston Railroad.

**McAlpin**; village in Harrison County.

**McCauleys**; run, a left-hand branch of Oil Creek in Braxton County.

**McClains**; post village in Jackson County.

**McClung**; branch, a small left-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.

**McClungs**; post village in Greenbrier County.

**McClure**; branch, a small right-hand tributary to South Fork of Tug River in McDowell County.

**McComas**; branch, a very small left-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**McComas**; branch, a right-hand tributary of Mud River in Cabell County.

**McComas**; post village in Mercer County.

**McConkey**; village in Taylor County.

**McCowans**; mount, a spur of Shavers Mountain, between Shavers and Gladys forks of Cheat River.

**McCoy**; run, a right-hand branch of Little Wheeling Creek in Ohio County.

**McCue**; post village in Upshur County.

**McCurdy**; post village in Cabell County.

**McDonald**; fork, a small left-hand branch of Big Cub Creek, a tributary to Guyandot River, in Wyoming County.

**MacDonald**; station in Fayette County on the Chesapeake and Ohio Railway and on Dunloup Creek, a tributary to New River.

**McDonald Mill**; creek, a small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.

**McDowell**; branch, a very small left-hand tributary to Clear Fork of Coal River in Raleigh County.

- McDowell**; county, situated in the southern part of the State on the Allegheny Plateau. It is deeply dissected. The surface is drained in the main by Tug Fork of Big Sandy River.
- McDowell**; post village in McDowell County on the Norfolk and Western Railway.
- McElroy**; branch, a small left-hand tributary to Ohio River in Tyler County.
- McElroy**; creek, a small left-hand tributary to Ohio River in Doddridge County.
- MacFarlan**; post village in Ritchie County.
- McGee**; post village in Taylor County.
- McGraw**; run, a right-hand branch of Little Wheeling Creek in Ohio County.
- McGraws**; post village in Wyoming County. Altitude, 1,802 feet.
- McKee**; branch, a small right-hand tributary to Gauley River in Nicholas County.
- McKee**; mountain, a short ridge in Nicholas County. The highest peak reaches an altitude of 2,365 feet.
- McKendree**; station in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,411 feet.
- McKim**; creek, a small left-hand tributary to Ohio River in Pleasants County.
- McKim**; post village in Tyler County.
- Macksville**; post village in Pendleton County.
- McKinley**; post village in Wood County.
- McMechen**; town in Marshall County on the Baltimore and Ohio Railroad. Population, 1,465.
- McMellin**; post village in Monongalia County.
- McMillan**; creek, a small left-hand tributary to Big Laurel Creek, a branch of Cherry River, in Greenbrier County.
- McMillion**; creek, a left-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Mace Knob**; summit of Cheat Mountain in Pocahontas County.
- Madam**; creek, a small left-hand tributary to New River in Summers County.
- Madison**; county seat of Boone County.
- Madison**; creek, a left-hand branch of Guyandot River in Cabell County.
- Madison**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Wayne County.
- Madison**; run, a small right-hand tributary to Cheat River in Preston County.
- Magazine**; branch, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.
- Maggie**; post village in Mason County on the Baltimore and Ohio Railroad.
- Magnolia**; post village in Morgan County on the Baltimore and Ohio Railroad.
- Mahan**; run, a left-hand branch of Buffalo Creek in Marion County.
- Mahogany**; run, a left-hand branch of Muach Run in Monongalia County.
- Mahone**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Mahone**; post village in Ritchie County.
- Mahoney**; creek, a left-hand branch of Mud River in Lincoln County.
- Maidsville**; post village in Monongalia County.
- Majorsville**; post village in Marshall County.
- Malden**; post village in Kanawha County on the Chesapeake and Ohio and the Ohio Central railroads. Altitude, 606 feet.
- Malta**; post village in Barbour County.
- Mammoth**; post village in Kanawha County on the Kellys Creek Railroad.
- Man**; creek, a small right-hand branch of Glade Creek, a tributary to New River, in Fayette County.
- Man**; post village in Logan County.
- Mandeville**; post village in Summers County.
- Manganese**; post village in Wood County.

- Manheim**; post village in Preston County.
- Manila**; post village in Boone County.
- Manning**; branch, a very small left-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Manning**; branch, a very small right-hand tributary to Little Coal River in Boone County.
- Manning**; run, a small right-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Manning Knob**; summit in Greenbrier County.
- Mannington**; town in Marion County on the Baltimore and Ohio Railroad. Altitude, 967 feet. Population, 1,681.
- Mann Knob**; summit in Wayne County. Altitude, 1,437 feet.
- Mann Knob**; summit in Greenbrier County.
- Manns**; creek, a small right-hand tributary to New River in Fayette County.
- Manown**; post village in Preston County.
- Maple**; fork, a small right-hand branch of Sand Fork of Paint Creek, a tributary to Kanawha River, in Raleigh County.
- Maple**; post village in Monongalia County.
- Maple**; run, a left-hand branch of Cheat River in Monongalia County.
- Mapledale**; post village in Greenbrier County.
- Maple Meadow**; creek, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Maplewood**; post village in Fayette County.
- Marary**; branch, a small left-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- Marcus**; post village in Webster County.
- Margaret**; post village in Harrison County.
- Marie**; post village in Summers County.
- Marion**; county, situated in the northern part of the State, on the Allegheny Plateau. It is drained by tributaries to the Monongahela. Area, 357 squares miles. Population, 32,430—white, 31,942; negro, 482; foreign born, 1,769. County seat, Fairmont. The mean magnetic declination in 1900 was 3° 10'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.
- Marion**; post village in Wetzel County on the West Virginia Northern Railroad.
- Mark**; run, a right-hand tributary of Left Fork of Steer Creek in Gilmer County.
- Market**; post village in Doddridge County.
- Marlin**; mountain, a short ridge in Pocahontas County. The highest peak reaches an altitude of 3,198 feet.
- Marlin**; mountain, a short ridge between Thorny and Browns creeks in Pocahontas County.
- Marlin Lick**; small left-hand tributary to Greenbrier River in Pocahontas County.
- Marlinton**; county seat of Pocahontas County on the Chesapeake and Ohio Railway. Population, 171.
- Marlowe**; village in Berkeley County.
- Marmet**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Marpleton**; post village in Braxton County.
- Marquess**; post village in Preston County.
- Marrowbone**; creek, a small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Marrs**; branch, a very small left-hand tributary to New River in Fayette County.
- Marsh**; fork, a stream in Raleigh County, uniting with Clear Fork to form Coal River.

- Marsh**; fork, a small right-hand branch of Big Hart Creek, a tributary to Guyandot River, in Lincoln County.
- Marsh**; fork, a small right-hand branch of Slab Fork, a tributary to Guyandot River, in Wyoming County.
- Marsh**; fork, an indirect left-hand tributary to Indian Creek, a branch of Guyandot River in Wyoming County.
- Marshall**; county, situated at the base of the Panhandle, bordering upon the Ohio River. Area, 311 square miles. Population, 26,444—white, 25,941; negro, 499; foreign born, 1,264. County seat, Moundsville. The mean magnetic declination in 1900 was  $1^{\circ} 50'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Ohio River and the Baltimore and Ohio railroads.
- Marshall**; post village in Jackson County.
- Marshes**; post village in Raleigh County.
- Marshville**; post village in Harrison County.
- Martha**; post village in Cabell County.
- Marthas Ridge**; short spur north of North Fork of Greenbrier River in Pocahontas County. Altitude, 3,500 to 4,000 feet.
- Martin**; branch, a left-hand tributary to Pocotaligo River, a branch of Kanawha River, in Kanawha County.
- Martin**; fork, a left-hand branch of Peachtree Creek, a tributary to Marsh Fork of Coal River, in Raleigh County.
- Martin**; post village in Grant County.
- Martinsburg**; county seat of Berkeley County on the Baltimore and Ohio and the Cumberland Valley railroads. Population, 7,564.
- Marytown**; post village in McDowell County.
- Mash**; branch, a small right-hand tributary to Dingus Run, a branch of Guyandot River, in Logan County.
- Mason**; county, situated in the western part of the State, bordering on Ohio River at the foot of the Allegheny Plateau. Area, 457 square miles. Population, 24,142—white, 23,604; negro, 537; foreign born, 317. County seat, Point Pleasant. The mean magnetic declination in 1900 was  $0^{\circ} 35'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Ohio Central Lines and the Ohio River Railroad.
- Mason**; village in Mason County. Population, 904.
- Masontown**; post village in Preston County on the Morgantown and Kingwood Railroad.
- Masonville**; post village in Grant County.
- Mast Knob**; summit in Randolph County.
- Matchless**; post village in Berkeley County.
- Mate**; creek, a small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Matewan**; post village in Mingo County on the Norfolk and Western Railway.
- Matewan**; station in Logan County on the Norfolk and Western Railway and on Tug Fork of Chattarawha River.
- Mathias**; post village in Hardy County.
- Mats**; creek, a small right-hand tributary to West Fork, a branch of Pond Fork of little Coal River, in Boone County.
- Mattie**; post village in Roane County.
- Matts**; creek, a very small left-hand tributary to Greenbrier River in Summers and Monroe counties.
- Matville**; post village in Raleigh County.
- Maud**; post village in Wetzel County on the Baltimore and Ohio Railroad.
- Maud**; run, a right-hand branch of North Fork of Fishing Creek in Wetzel County.

- Maxwell**; post village in Pleasants County.
- Maxwelton**; post village in Greenbrier County.
- May**; post village in Doddridge County.
- Maybeury**; post village in McDowell County on Norfolk and Western Railway and on South Fork of Elkhorn Creek. Altitude, 2,162 feet.
- Maynard**; branch, a very small right-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Mays**; gap in Little Mountain, caused by New Creek, in Grant County.
- Maysville**; post village in Grant County.
- Mayton**; post village in Webster County.
- Maywood**; post village in Fayette County.
- Meadland**; village in Taylor County.
- Meadow**; branch, a very small right-hand tributary to Middle Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Meadow**; branch, a right-hand branch of Sleepy Creek in Berkeley and Morgan counties.
- Meadow**; creek, a right-hand branch of Anthony Creek, a tributary to Greenbrier River, in Greenbrier County.
- Meadow**; creek, a small right-hand tributary to New River in Summers and Fayette counties.
- Meadow**; creek, a small right-hand branch of Meadow River, a tributary to Gauley River, in Greenbrier County.
- Meadow**; creek, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Meadow**; fork, a small left-hand branch of Devils Fork, a tributary to Guyandot River, in Raleigh County.
- Meadow**; fork, a small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.
- Meadow**; fork, a small right-hand branch of Cabin Creek, a tributary to Guyandot River, in Wyoming County.
- Meadow**; fork, a small right-hand branch of Brier Creek, a tributary to Coal River, in Kanawha County.
- Meadow**; river, a large left-hand branch of Gauley River, rising in Greenbrier County and flowing northwestward, forming the boundary between Fayette and Nicholas counties, until it enters the Gauley at Carnifax Ferry.
- Meadow**; run, a right-hand branch of Oil Creek in Braxton County.
- Meadow**; run, a right-hand branch of Middle Wheeling Creek in Ohio County.
- Meadowbluff**; post village in Greenbrier County.
- Meadowbrook**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Meadow Creek**; mountain, a ridge in Greenbrier County lying nearly parallel to Allegheny Mountains. Altitude, 2,500 to 3,000 feet.
- Meadowcreek Station**; post village in Summers County on the Chesapeake and Ohio Railway.
- Meadowdale**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Meadowville**; post village in Barbour County.
- Meadville**; post village in Tyler County.
- Measle**; fork, a small right-hand branch of Slab Fork, a tributary to Guyandot River, in Wyoming County.
- Medina**; post village in Jackson County.
- Medley**; post village in Grant County.
- Meethouse**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Meethouse**; fork, a right-hand head fork of Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Meeting House;** branch, a very small left-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Meeting House;** run, a left-hand branch of Lost River in Taylor County.

**Meighen;** post village in Marshall County.

**Melissa;** post village in Cabell County.

**Mentor;** post village in Jackson County.

**Mercer;** county, situated in the southern part of the State bordering on Virginia.

It lies on the Allegheny Plateau or East River Mountains, which here form the escarpment which is the southern boundary of the county. Its elevation ranges from 2,000 to 4,000 feet. It is drained by tributaries to New River. Area, 437 square miles. Population, 23,023—white, 20,119; negro, 2,902; foreign born, 269. County seat, Princeton. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.

**Mercer;** post village in Hancock County.

**Mercers Bottom;** post village in Mason County on the Baltimore and Ohio Railroad.

**Mercers Saltworks;** post village in Summers County.

**Meriden;** post village in Barbour County.

**Merrick;** branch, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Merrick;** creek, a very small left-hand tributary to Middle Fork of Mud River in Lincoln County.

**Merritt;** creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Messer;** creek, a very small right-hand branch of Marrowbone Creek, a tributary to Tug Fork of Big Sandy River, in Logan County.

**Messer;** run, a left-hand tributary of Pyles Fork of Buffalo Creek in Marion County.

**Metz;** post village in Marion County on the Baltimore and Ohio Railroad.

**Micajah Ridge;** mountains in Wyoming County.

**Michael;** mountain, a short ridge in Pocahontas County. Altitude, 3,000 to 3,500 feet.

**Middle;** branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Middle;** branch, a small right-hand tributary to Barker Creek, a branch of Guyandot River, in Wyoming County.

**Middle;** creek, a small left-hand tributary to Elk River in Clay County.

**Middle;** creek, a left-hand branch of Middle Fork of Mud River in Cabell County.

**Middle;** fork, a head fork of Back Fork of Elk River in Randolph County.

**Middle;** fork, a head fork of Cedar Creek in Braxton County.

**Middle;** fork, a small left-hand branch of Patterson Creek, a tributary to North Branch of Potomac River, in Grant County.

**Middle;** fork, a left-hand tributary to Williams River in Webster and Pocahontas counties.

**Middle;** fork, a left-hand branch of Davis Creek, a tributary to Kanawha River, in Kanawha County.

**Middle;** fork, a small left-hand tributary to Canoe Run in Lewis County.

**Middle;** fork, an indirect left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Middle;** fork, a small right-hand tributary to Right Fork of Buckhannon River in Randolph County.

**Middle;** fork, a small right-hand branch of Trace Fork of Guyandot River, a tributary to Ohio River, in Logan County.

**Middle;** fork, a right-hand branch of Island Creek, a tributary to Guyandot River, in Logan County.

**Middle**; mountain, a narrow ridge between Gap Mountain and Cove Mountain in Monroe County. Altitude, 2,500 to 3,000 feet.

**Middle**; mountain, a short ridge in the northern part of Pocahontas County. Altitude, 3,500 feet.

**Middle**; mountain, a narrow ridge in Pocahontas and Greenbrier counties.

**Middle**; mountain, a short ridge in Pendleton and Grant counties. Altitude, 2,000 feet.

**Middle**; run, a small left-hand tributary to Little Kanawha River in Gilmer County.

**Middle**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.

**Middle**; run, a small left-hand tributary to Gauley River in Nicholas County.

**Middle**; run, a small right-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.

**Middle**; run, a small right-hand tributary to Birch River in Braxton County.

**Middlebourne**; county seat of Tyler County. Population, 403.

**Middle Fork**; mountain, a ridge in Webster and Pocahontas counties, between Cranberry and Williams rivers. Altitude, 3,500 to 4,000 feet.

**Middlefork**; post village in Randolph County on the Baltimore and Ohio Railroad.

**Middle Island**; creek, a left-hand branch of Ohio River, rising in Tyler County.

**Middle Lick**; fork, a small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.

**Middleton**; fork, a very small left-hand tributary to Bluestone River, in Mercer County.

**Middleway**; town in Jefferson County. Population, 466.

**Middle Wheeling**; creek, a left-hand branch of Little Wheeling Creek, in Ohio County.

**Midkiff**; post village in Lincoln County.

**Midway**; post village in Putnam County on the Ohio Central Lines.

**Mike**; run, a right-hand tributary of Ellis Creek in Gilmer County.

**Mike Knob**; summit of Yew Mountains in Greenbrier County. Altitude, 4,276 feet.

**Milam**; branch, a small right-hand tributary to South Fork of Tug River in McDowell County.

**Milam**; creek, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Milam**; post village in Hardy County.

**Milam Ridge**; mountains in Wyoming County.

**Milan**; fork, a left-hand branch of Barker Creek, a tributary to Guyandot River, in Wyoming County.

**Milan**; fork, a left-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.

**Milburn**; branch, a small left-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.

**Milburn**; creek, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.

**Mill**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.

**Mill**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.

**Mill**; branch, a small right-hand tributary to Whiteoak Creek, a branch of Coal River, in Boone County.

**Mill**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.

**Mill**; branch, a very small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.



- Mile**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Mile**; fork, a right-hand branch of Cooper Creek, a tributary to Elk River, in Kanawha County.
- Miles**; post village in Pendleton County.
- Miletus**; post village in Doddridge County.
- Mill**; branch, a very small left-hand tributary to Cherry River, a branch of Gauley River, in Nicholas County.
- Mill**; branch, a very small left-hand tributary to Fields Creek, a branch of Kanawha River, in Kanawha County.
- Mill**; branch, a small right-hand tributary to Williams River in Webster County.
- Mill**; branch, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Mill**; branch, a very small right-hand tributary to Tug River in McDowell County.
- Mill**; branch, a small right-hand tributary to Camp Creek, a branch of Bluestone River, in Mercer County.
- Mill**; branch, a small right-hand tributary to Barker Creek, a branch of Guyandot River, in Wyoming County.
- Mill**; branch, a very small right-hand tributary to Winding Gulf, a branch of Guyandot River, in Raleigh County.
- Mill**; creek, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.
- Mill**; creek, a left-hand tributary to South Branch of Potomac River in Hampshire County.
- Mill**; creek, a small left-hand branch of Patterson Creek, a tributary to North Branch of Potomac River, in Mineral County.
- Mill**; creek, a very small left-hand branch of Island Creek, a tributary to Guyandot River, in Logan County.
- Mill**; creek, a small left-hand tributary to Bluestone River in Mercer County.
- Mill**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Mill**; creek, a very small left-hand tributary to New River in Raleigh County.
- Mill**; creek, a left-hand tributary to Elk River, a large branch of Kanawha River, in Kanawha County.
- Mill**; creek, a small left-hand branch of Ohio River in Jackson County.
- Mill**; creek, a left-hand tributary to Elk River in Kanawha County.
- Mill**; creek, a small left-hand tributary to Valley River in Randolph County.
- Mill**; creek, a small left-hand tributary to Elk River in Braxton County.
- Mill**; creek, a small left-hand tributary to Birch River, in Nicholas County.
- Mill**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Mill**; creek, a small right-hand tributary to Meadow River, a branch of Gauley River, in Greenbrier County.
- Mill**; creek, a small right-hand tributary to Tygarts Valley River in Barbour County.
- Mill**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Mill**; creek, a very small right-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Mill**; creek, a small right-hand tributary to Dunloup Creek, a branch of New River, in Raleigh County.
- Mill**; creek, a very small right-hand branch of Guyandot River, a tributary to Ohio River, in Logan County.
- Mill**; creek, a small right-hand branch of Hurricane Creek, a tributary to Kanawha River, in Putnam County.

- Mill**; creek, a right-hand tributary to New River in Fayette County.
- Mill**; creek, a right-hand branch of Valley River in Randolph County.
- Mill**; gap in a spur of the South Fork Mountains, caused by Brushy Run, in Pendleton County.
- Mill**; mountain, a short ridge on the boundary line between Hardy County, W. Va., and Shenandoah County, Va. Altitude; 3,000 feet.
- Mill**; run, a small left-hand tributary to Elk River in Webster County.
- Mill**; run, a small left-hand tributary to Gauley River in Webster County.
- Mill**; run, a small left-hand tributary to North Fork of Potomac River in Pendleton County.
- Mill**; run, a small, left-hand tributary to Elk River in Braxton County.
- Mill**; run, a small right-hand branch of Knapp Creek, a tributary of Greenbrier River, in Pocahontas County.
- Mill**; run, a small right-hand tributary to Back Fork of Elk River in Webster County.
- Mill**; run, a small right-hand tributary to Gauley River in Webster County.
- Mill**; run, a small right-hand tributary to Williams River in Webster County.
- Mill**; run, a small right-hand tributary to South Branch of Potomac River in Pendleton County.
- Mill**; run, a small right-hand tributary to Dry Fork of Cheat River in Tucker County.
- Mill**; run, a small right-hand branch of Sugar Creek, a tributary to Back Fork of Elk River, in Webster and Randolph counties.
- Mill**; run, a small right-hand tributary to Elk River in Webster County.
- Mill**; run, head fork of Teter Creek, a branch of Tygarts Valley River, in Barbour County.
- Millard**; post village in Roane County.
- Millbrook**; post village in Hampshire County.
- Mill Creek**; mountain, a long, narrow ridge, lying parallel to the South Branch of the Potomac River, in Hardy and Hampshire counties. Altitude, 1,000 to 2,000 feet.
- Mill Creek**; post village in Randolph County on the West Virginia Central and Pittsburg Railway.
- Miller**; creek, a small right-hand branch of Meadow River, a tributary to Gauley River, in Nicholas County.
- Miller**; run, a left-hand branch of Miller Fork of Rock Run in Wetzel County.
- Miller Knob**; summit in Webster County. Altitude, 2,742 feet.
- Miller Ridge**; short mountainous range in Webster County, south of the Gauley River.
- Millers**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Millers**; fork, a right-hand tributary to Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Millers Camp**; branch, a right-hand head fork of Marsh Fork of Coal River in Raleigh County.
- Millers Camp Branch**; post village in Raleigh County.
- Millers Ridge**; short spur in Greenbrier County. Altitude, 2,500 feet.
- Mill Fall**; run, a left-hand branch of West Fork River in Marion County.
- Millhill**; post village in Greenbrier County.
- Mill Hill**; summit in Greenbrier County.
- Mill Hollow**; small right-hand tributary to Kanawha River in Kanawha County.
- Milligan**; creek, a small right-hand tributary to Greenbrier River in Greenbrier County.
- Mill Knob**; summit in Nicholas County.
- Millpoint**; post village in Pocahontas County.

**Millsboro**; post village in Marshall County.

**Millsite**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Mill Site**; run, a small right-hand branch of Little Kanawha River in Gilmer County.

**Mill Site**; run, a small right-hand tributary to Right Fork of Buckhannon River in Upshur County.

**Millstone**; post village in Calhoun County.

**Millstone**; run, a right-hand branch of Little Kanawha River in Braxton County.

**Millville**; post village in Jefferson County on the Baltimore and Ohio Railroad.

**Millwood**; post village in Jackson County on the Baltimore and Ohio Railroad.

**Milo**; post village in Calhoun County.

**Milroy**; post village in Braxton County.

**Milton**; town in Cabell County on the Chesapeake and Ohio Railway. Altitude, 586 feet. Population, 582.

**Mineral**; county, situated in the northeastern part of the State, limited on the west and north by Potomac River. Its surface is an alternation of ridges and valleys; ranging in elevation from 800 to over 3,000 feet. Area, 332 square miles. Population, 12,883—white, 12,218; negro, 665; foreign born, 451. County seat, Keyser. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Baltimore and Ohio and the West Virginia Central and Pittsburg railroads.

**Mineral**; post village in Harrison County.

**Mineralwells**; post village in Wood County.

**Mingo**; county, situated in the southwestern part of the State, bordering on Big Sandy River, and lying on the Allegheny Plateau. It is here deeply dissected. Area, 424 square miles. Population, 11,359—white, 11,050; negro, 309; foreign born, 65. County seat, Williamson. The mean magnetic declination in 1900 was 45'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.

**Mingo**; post village in Randolph County.

**Mingo**; run, a small left-hand tributary to Valley River in Randolph County.

**Mingo**; run, a right-hand branch of Buffalo Creek in Brooke County.

**Mingo Knob**; summit in Randolph County.

**Mink**; post village in Kanawha County.

**Minkshoal**; branch, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.

**Minnie**; post village in Wetzel County.

**Minnora**; post village in Calhoun County.

**Minverton**; post village in Fayette County.

**Mipp**; post village in Wirt County.

**Miracle**; run, a right-hand branch of Dunkard Creek in Monongalia County.

**Miracle Run**; post village in Monongalia County.

**Missouri**; creek, a small left-hand tributary to Laurel Creek in Webster County.

**Missouri**; creek, a very small right-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Missouri**; fork, a small left-hand branch of Hewett Creek, a tributary to Little Coal River, in Boone and Logan counties.

**Mitchell**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Mitchell**; post village in Pendleton County on the Ohio Central Lines.

**Mitchell**; run, a small right-hand tributary to Back Fork of Elk River in Randolph County.

**Mitchell Lick**; fork, a right-hand branch of Left Fork of Middle Fork of Tygarts Valley River in Randolph County.

**Mitchell Ridge**; mountains in Raleigh County.

**Mitten Ridge**; short range of mountains in Webster County. Altitude, 3,000 feet.

**Mobley**; post village in Wetzel County.

**Moccasin**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.

**Mod**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Mod**; run, a left-hand branch of Buffalo Creek in Marion County.

**Modoc**; post village in Greenbrier County.

**Moffett Knob**; summit in Pocahontas County. Altitude, 4,210 feet.

**Mohr**; post village in Wetzel County.

**Molehill**; post village in Ritchie County.

**Molers**; village in Jefferson County.

**Moll Kelly**; branch, a small left-hand tributary to Peachtree Creek, a branch of Marsh Fork of Coal River, in Raleigh County.

**Molly Kincaid**; branch, a very small left-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.

**Mona**; post village in Monongalia County.

**Monarch**; post village in Kanawha County on the Ohio Central lines.

**Money**; run, a right-hand branch of Fishing Creek in Wetzel County.

**Monitor**; post village in Monroe County.

**Monongah**; town in Marion County on the Baltimore and Ohio Railroad. Population, 1,786.

**Monongahela**; river, the southernmost of the two main forks of Ohio River, the other being the Allegheny, which rises in southwestern New York. It heads in Lewis, Upshur, and Randolph counties in several large branches, West Fork, Tygart Valley, and Cheat rivers, while to the eastward heads the Youghiogheny, which flows into it near its mouth. It joins the Allegheny at Pittsburg, forming the Ohio. Length, about 190 miles; drainage area, 7,625 square miles; navigable to Morgantown.

**Monongalia**; county, situated in the Allegheny Plateau. It is drained by tributaries of the Monongahela. Area, 368 square miles. Population, 19,049—white, 18,747; negro, 299; foreign born, 301. County seat, Morgantown. The mean magnetic declination in 1900 was 3° 15'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.

**Monroe**; county, situated in the southeastern part of the State. It is diversified by parallel ridges and valleys trending northeast and southwest. The western part is a plateau but little dissected and bearing numerous hills upon its surface. It is drained by tributaries of Greenbrier and New rivers. Area, 464 square miles. Population, 13,130—white, 12,300; negro, 830; foreign born, 32. County seat, Union. The mean magnetic declination in 1900 was 1° 55'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°.

**Monroe**; post village in Randolph County.

**Monroe Draft**; small left-hand tributary to Howards Creek, a branch of Greenbrier River, in Greenbrier County.

**Montana Mines**; post village in Marion County.

**Montcalm**; post village in Mercer County.

**Monterville**; post village in Randolph County.

**Montgomery**; town in Fayette County on the Chesapeake and Ohio Railway and on Kanawha River. Altitude, 634 feet. Population, 1,594.

- Montrose**; post village in Randolph County on the West Virginia Central and Pittsburgh Railway.
- Moore**; fork, a very small left-hand branch of Elk Creek, a tributary to Guyandot River, in Logan County.
- Moore**; post village in Tucker County on the West Virginia Central and Pittsburgh Railway.
- Moore**; run, a left-hand branch of Indian Fork in Gilmer County.
- Moore**; run, a small left-hand tributary to Greenbrier River in Pocahontas County.
- Moore Camp**; branch, a small right-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Moorefield**; county seat of Hardy County. Population, 460.
- Moorefield**; river, a right-hand head branch of South Branch of the Potomac in Hardy County.
- Moore**; run, a left-hand branch of Rocky Fork of Ellis Creek in Gilmer County.
- Mooresville**; post village in Monongalia County.
- Morford**; post village in Roane County.
- Morgan**; branch, a very small right-hand tributary to Drawdy Creek, a branch of Coal River, in Boone County.
- Morgan**; county, situated in the northeastern part of the State, limited on the north by Potomac River. The surface consists of broad valleys alternating with narrow ridges of no great height. Area, 235 square miles. Population, 7,294—white, 7,074; negro, 220; foreign born, 68. County seat, Berkeley Springs. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Baltimore and Ohio Railroad.
- Morgan**; run, a small left-hand tributary to Cheat River in Preston County.
- Morgan Ridge**; mountains in Mercer County.
- Morgans Glade**; post village in Preston County.
- Morgansville**; post village in Doddridge County on the Baltimore and Ohio Railroad.
- Morgantown**; county seat of Monongalia County on the Baltimore and Ohio and the Morgantown and Kingwood railroads. Population, 1,895. Altitude, 963 feet.
- Morley**; post village in Braxton County.
- Morocco**; post village in Clay County.
- Morris**; creek, a small left-hand tributary to Cranberry River, a branch of Gauley River, in Nicholas County.
- Morris**; creek, a very small left-hand tributary to Elk River in Kanawha County.
- Morris**; fork, a left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Morris**; post village in Wirt County.
- Morris**; run, a left-hand branch of Miller Fork of Rock Run in Wetzel County.
- Morrison**; fork, a very small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.
- Morrison**; fork, a left-hand branch of Little Hurricane Creek, a tributary to Kanawha River, in Putnam County.
- Mosby**; branch, a very small right-hand tributary to Big Cub Creek, a branch of Guyandot River, in Wyoming County.
- Moscow**; post village in Hancock County on the Pittsburgh, Cincinnati, Chicago and St. Louis Railroad.
- Moser Knob**; summit in Pendleton County.
- Moses**; creek, a very small left-hand branch of Right Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Moses**; run, a right-hand branch of Long Drain in Wetzel County.
- Mossy**; creek, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.

- Mossy**; post village in Fayette County.
- Mound**; post village in Kanawha County.
- Moundsville**; county seat of Marshall County on the Baltimore and Ohio Railroad. Population, 5,362. Altitude, 640 feet.
- Mountain**; creek, a small left-hand tributary to Bluestone River, a branch of New River, in Mercer County.
- Mountain**; fork, a small indirect right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Mountain**; run, a right-hand branch of Sleepy Creek in Morgan County.
- Mountain Cove**; post village in Fayette County.
- Mountain Lick**; small left-hand tributary to Williams River in Pocahontas County.
- Mount Carbon**; post village in Fayette County on Kanawha River and on the Chesapeake and Ohio and the Powellton and Pocahontas railways. Altitude, 639 feet.
- Mount Clare**; post village in Harrison County on the West Virginia Central and Pittsburg Railway. Altitude, 1,001 feet.
- Mount Desert**; summit in Kanawha County.
- Mount Harmony**; village in Marion County.
- Mount Hope**; town in Fayette County on Dunloup Creek, a tributary to New River. Population, 351.
- Mount Lookout**; post village in Nicholas County. Altitude, 2,017 feet.
- Mount Nebo**; post village in Nicholas County.
- Mount of Seneca**; post village in Pendleton County.
- Mount Olive**; post village in Mason County.
- Mount Storm**; post village in Grant County.
- Mount Tell**; post village in Jackson County.
- Mount Zion**; post village in Calhoun County.
- Mouse**; creek, a small left-hand branch of Hominy Creek, a tributary to Gauley River, in Nicholas County.
- Moyer**; gap between Sandy Ridge and Jack Mountains, caused by a small right-hand branch of South Branch of the Potomac, in Pendleton County.
- Moyer**; run, a small left-hand tributary to South Branch of the Potomac, in Pendleton County.
- Mozelle**; post village in Jackson County.
- Mud**; fork, a small left-hand tributary to Turtle Creek, a branch of Little Coal River, in Boone County.
- Mud**; fork, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Mud**; post village in Lincoln County.
- Muddlety**; creek, a right-hand branch of Gauley River, in Nicholas County.
- Muddlety**; post village in Nicholas County.
- Muddy**; creek, a right-hand tributary to Greenbrier River, in Greenbrier County.
- Muddy**; run, a small left-hand tributary to Cheat River, in Preston County.
- Muddy Cove**; branch, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Muddy Creek**; mountain, a ridge in Greenbrier County. Altitude, 2,000 to 2,500 feet.
- Mud Hole**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Mud Lick**; a small left-hand branch of Morris Fork of Blue Creek, a tributary to Elk River, in Kanawha County.
- Mud Lick**; a small right-hand tributary to Little Kanawha River, in Gilmer County.
- Mudlick**; branch, a small right-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.
- Mudlick**; branch, a very small right-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.

- Mud Lick**; fork, a small left-hand branch of Leatherwood Creek, a tributary to Elk River, in Kanawha County.
- Mudlick**; fork, a small left-hand tributary to Lural Creek, a branch of Coal River, in Boone County.
- Mud Lick**; fork, a small right-hand tributary to Blake Branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.
- Mudlick**; run, a left-hand branch of Carney Fork of Rock Run, in Wetzel County.
- Mudlick**; run, a left-hand branch of Pritchett Creek, in Marion County.
- Mud Lick**; run, a small left-hand tributary to South Branch of the Potomac, in Hardy County.
- Mulberry**; fork, a left-hand branch of Jenkins Fork of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Mulberry**; fork, a small right-hand tributary to Left Fork of Middle Fork of Tygart Valley River, in Randolph County.
- Mullin**; branch, a very small left-hand tributary to Winding Gap, a branch of Guyandot River, in Raleigh County.
- Mulvane**; post village in Fayette County.
- Munday**; post village in Wirt County.
- Mundy Lick**; small left-hand tributary to Greenbrier River, in Pocahontas County.
- Mundy Lick Ridge**; short mountainous range between Greenbrier River and Buckley Mountain, in Pocahontas County.
- Munson**; post village in Morgan County.
- Murphytown**; post village in Wood County.
- Murraysville**; post village in Jackson County, on the Baltimore and Ohio Railroad.
- Muses Bottom**; post village in Jackson County.
- Musick**; post village in Mingo County.
- Mutton Run**; post village in Hampshire County.
- Muzzle**; fork, a small left-hand branch of Little Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Myerstown**; village in Jefferson County.
- Myra**; post village in Lincoln County.
- Myrtle**; post village in Mingo County.
- Nancy**; fork, a small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Napier**; post village in Braxton County.
- Napier Ridge**; range of hills in Wayne County. Altitude, about 1,200 feet.
- Narrow**; branch, a very small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.
- Nat**; post village in Mason County.
- Naul**; creek, a right-hand branch of Little Kanawha River, in Braxton County.
- Neal**; branch, a small right-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.
- Nease**; post village in Mason County.
- Ned**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.
- Needmore**; post village in Hardy County.
- Neel**; village in Marion County.
- Nelson**; branch, a very small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Neponset**; post village in Summers County.
- Neptune**; post village in Jackson County.
- Nesselroad**; post village in Jackson County.

- Nestlow**; post village in Wayne County.
- Nestorville**; post village in Barbour County.
- Nettly**; mountain, a short ridge west of Valley River, in Randolph County.
- New**; creek, a left-hand tributary to North Fork of Potomac River, in Grant County.
- New**; creek, a right-hand tributary to North Branch of Potomac River, in Grant and Mineral counties.
- New**; post village in Raleigh County.
- New**; river, a large branch of the Kanawha River, rising in Watauga County, N. C., and flowing in a peculiar course first north and thence westward to its junction with the Gauley River, where they form the Kanawha, in Fayette County, W. Va.
- Newark**; post village in Wirt County on the Little Kanawha Railroad.
- Newberne**; post village in Gilmer County.
- Newburg**; town in Preston County on the Baltimore and Ohio Railroad. Population, 751. Altitude, 755 feet.
- Newcomb**; creek, a very small left-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Newcomb**; creek, a small right-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- New Creek**; mountain, a broken, mountainous country in Grant and Mineral counties. Altitude, 2,000 to 2,500 feet.
- Newcreek**; post village in Mineral County.
- New Cumberland**; county seat of Hancock County on the Pittsburg, Cincinnati, Chicago and St. Louis Railroad. Population, 2,198.
- Newdale**; post village in Wetzel County.
- New England**; post village in Wood County.
- Newfound**; post village in Wyoming County.
- Newhaven**; post village in Mason County, on the Baltimore and Ohio Railroad.
- New Hope**; post village in Mercer County.
- Newhouse**; branch, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.
- Newlands**; run, a right-hand tributary of Short Creek, in Brooke County.
- Newlandsville**; post village in Pleasants County.
- Newlonton**; post village in Upshur County.
- New Martinsville**; county seat of Wetzel County. Population, 1,089.
- New Milton**; post village in Doddridge County.
- Newport**; post village in Wood County.
- New Richmond**; post village in Summers County, on the Chesapeake and Ohio Railway. Altitude, 1,289 feet.
- Newson**; branch, a small left-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Newton**; post village in Roane County, on the West Virginia Central and Pittsburg Railway. Altitude, 1,917 feet.
- Newville**; post village in Braxton County.
- Next**; post village in Tyler County.
- Nicholas**; county, situated in the central part of the State, on the Allegheny Plateau. It is drained by Gauley River and its tributaries. Area, 691 square miles. Population, 11,403—white, 11,384; negro, 19; foreign born, 245. County seat, Summersville. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°.
- Nickells Knob**; summit in Greenbrier County. Altitude, 2,725 feet.
- Nickells Mills**; post village in Monroe County.
- Nicklow**; post village in Barbour County.
- Nicolette**; post village in Wood County on the Baltimore and Ohio Railroad.



- Nigger**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Nigger Camp**; run, a small right-hand branch of Old Lick Creek, a tributary to Holly River, in Webster County.
- Nina**; post village in Doddridge County.
- Ninemile**; creek, a small left-hand tributary to Ohio River in Cabell County.
- Ninemile**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Ninemile**; fork, a small left-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Nixon**; post village in Upshur County.
- Nobe**; post village in Calhoun County.
- Nolan**; post village in Mingo County.
- Norman**; run, a small left-hand tributary to Holly River in Webster County.
- Normantown**; post village in Gilmer County.
- North**; branch, a small right-hand tributary to Big Creek, a branch of Guyandot River, in Logan County.
- North**; river, a large left-hand branch of Great Cacapon River, rising in South Branch Mountain, in Hardy County.
- North Fork**; mountains in the eastern part of the State, lying between North and South forks of the Potomac, in Pendleton and Grant counties. Altitude, 2,000 to 4,000 feet.
- North Fork**; post village in McDowell County on the Norfolk and Western Railway and on Elkhorn Creek.
- North Mill**; creek, a right-hand tributary to South Branch of the Potomac, in Grant and Pendleton counties, known in its upper course as Brushy Run.
- North Mountain**; post village in Berkeley County on the Baltimore and Ohio Railroad. Altitude, 547 feet.
- Northriver Mills**; post village in Hampshire County.
- Northspring**; post village in Wyoming County.
- Norwood**; post village in McDowell County on Elkhorn Creek and on the Norfolk and Western Railway.
- Noseman**; branch, a very small right-hand tributary to Cooney Otter Creek, an indirect left-hand tributary to Guyandot River, in Wyoming County.
- Notchlog**; fork, a small left-hand tributary to Dry Branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Numan**; post village in Doddridge County.
- Nunly**; mountain, a short ridge in Greenbrier County.
- Nuttallburg**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 944 feet.
- Nutter**; run, a small left-hand tributary to Little Kanawha River in Gilmer County.
- Nutterfarm**; post village in Ritchie County.
- Nuttsville**; post village in Greenbrier County.
- Nye**; post village in Putnam County.
- Oak**; branch, a very small left-hand tributary to Long Pole Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Oak**; post village in Wood County.
- Oakflat**; post village in Pendleton County.
- Oakgrove**; post village in Mercer County.
- Oakland**; post village in Morgan County.
- Oakvale**; post village in Mercer County on the Norfolk and Western Railway. Altitude, 1,705 feet.
- Oakville**; post village in Roane County on the Norfolk and Western Railway.
- O'Brien**; creek, a small right-hand tributary to Elk River in Clay County.

**O'Brien**; fork, a left-hand branch of Salt Lick Fork of Little Kanawha River in Braxton County.

**O'Brien**; fork, a right-hand branch of Right Fork of Steer Creek in Gilmer and Braxton counties.

**Oceana**; county seat of Wyoming County. Population, 187.

**Odaville**; post village in Jackson County.

**Odd**; post village in Raleigh County.

**Odell**; post village in Kanawha County on the Clendennin and Spencer Railway.

**Odessa**; post village in Clay County on Porters Creek and Gauley Railway.

**Ogdin**; post village in Wood County.

**Ohio**; county, situated in the Panhandle, bordering on Ohio River. Area, 111 square miles. Population, 48,024—white, 46,765; negro, 1,251; foreign born, 6,140. County seat, Wheeling. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Wheeling and Lake Erie, the Wheeling Terminal, the Baltimore and Ohio, the Cleveland, Lorain and Wheeling, the Ohio River, the Pittsburg, Cincinnati, Charleston and St. Louis, and the Wheeling and Elm Grove railroads.

**Ohio**; river, formed by the Allegheny and Monongahela rivers, which unite at Pittsburgh, in Pennsylvania, where it is a navigable stream about 600 yards wide. It runs first northwestward to Beaver, and, after it has crossed the western boundary of Pennsylvania, flows southward to Wheeling. Below this point it forms the boundary between Ohio and West Virginia, and runs southwestward to the mouth of the Sandy River. It next forms the boundary between Kentucky and Ohio, and pursues a west-northwestward course to Cincinnati. After it strikes the eastern border of Indiana, it runs nearly southwestward with a very sinuous course and forms the boundary between Indiana and Illinois on the right and Kentucky on the left, until it enters the Mississippi at Cairo, in latitude 37° N., and about 1,200 miles from the mouth of the Great River. Drainage area, 201,720 square miles. Length, 963 miles. It is navigable throughout.

**Oil**; creek, a right-hand branch of Little Kanawha River in Braxton and Lewis counties.

**Oilville**; post village in Logan County.

**Oka**; post village in Calhoun County.

**Okeeffe**; post village in Mingo County.

**Okonoko**; post village in Hampshire County on the Baltimore and Ohio Railroad.

**Old Camp**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.

**Old Field**; fork, a left-hand head fork of Elk River in Pocahontas County.

**Old Field**; fork, a right-hand branch of Sand Fork in Lewis County.

**Old Field**; mountain, a short ridge in Greenbrier County. One of the peaks has an altitude of 4,244 feet.

**Old Field Ridge**; short spur between Black Run of North Fork of Greenbrier and North Fork of Pocahontas County.

**Oldfields**; post village in Hardy County. Altitude, 800 feet.

**Old House**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.

**Old House**; branch, a very small right-hand tributary to Spruce Fork of Little Coal River, in Logan County.

**Old Lick**; creek, a head fork of Left Fork of Holly River in Webster County.

**Old Man**; run, a small right-hand tributary to Cacapon River in Hampshire County.

**Old Perryville**; village, in McDowell County, located on Dry Fork, a tributary to Tug Fork of Big Sandy River.

- Old Shop**; branch, a very small right-hand tributary to Winding Gap, a branch of Guyandot River, in Raleigh County.
- Old Slab**; fork, a small right-hand branch of Slab Fork, a tributary to Guyandot River, in Wyoming County.
- Oldtown**; village in Mason County.
- Old Woman**; run, a very small right-hand tributary to Elk River in Braxton County.
- Oley**; post village in Raleigh County.
- Olive**; post village in Harrison County.
- Olympia**; post village in Wirt County.
- Omps**; post village in Morgan County.
- Ona**; post village in Cabell County on the Chesapeake and Ohio Railway. Altitude, 623 feet.
- One**; fork, a small indirect tributary to Buffalo Creek, a branch of Elk River, in Clay County.
- Onego**; post village in Pendleton County.
- O'Neills Knob**; summit in Greenbrier County.
- Onemile**; creek, a very small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Onemile**; creek, a very small right-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.
- Onemile**; fork, a very small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Onoto**; post village in Pocahontas County.
- Oors**; run, a right-hand tributary of Middle Wheeling Creek in Ohio County.
- Oozley**; branch, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Opekiska**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Open**; fork, a right-hand branch of Bell Creek, a tributary to Gauley River, in Nicholas and Clay counties.
- Open**; fork, a small right-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.
- Openmouth**; branch, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Logan County.
- Ophelia**; post village in Nicholas County.
- Opossum**; creek, a right-hand branch of Mill Creek, a tributary to New River, in Fayette County.
- Oral**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Orange**; post village in Boone County.
- Orchard**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Orchard**; branch, a very small left-hand branch of Laurel Creek, a tributary to New River, in Fayette County.
- Orchard**; branch, a small left-hand branch of Sandlick Fork of Laurel Creek, a tributary to Coal River, in Boone County.
- Orchard**; post village in Monroe County.
- Orem**; post village in Wood County.
- Organcave**; post village in Greenbrier County.
- Orient**; post village in Calhoun County.
- Orleans Crossroads**; post village in Morgan County on the Baltimore and Ohio Railroad.
- Orlena**; post village in Randolph County.
- Orpha**; post village in Barbour County.
- Orr**; post village in Preston County.

**Osborne**; creek, a right-hand branch of Mill Creek, a tributary to New River, in Fayette County.

**Osbornes Mills**; post village in Roane County.

**Osceola**; post village in Randolph County.

**Osgood**; post village in Monongalia County.

**Otia**; post village in Mason County.

**Otter**; branch, a very small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.

**Otter**; creek, a small right-hand tributary to Meadow River, in Greenbrier County.

**Otter**; creek, a small right-hand branch of Peters Creek, a tributary to Gauley River, in Nicholas County.

**Otter**; creek, a left-hand branch of Tygart Valley River in Taylor County.

**Otter**; fork, one of the head forks of Left Fork of Steer Creek in Braxton County.

**Otter**; fork, a left-hand tributary to Dry Fork of Cheat River in Tucker and Randolph counties.

**Otter**; fork, a very small right-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.

**Otter**; run, a right-hand branch of Pritchett Creek in Marion County.

**Otto**; post village in Roane County.

**Overfield**; post village in Barbour County.

**Overhill**; post village in Upshur County.

**Owen**; run, a small right-hand tributary to Left Fork of Steer Creek in Gilmer County.

**Oxbow**; post village in Ritchie County.

**Oxford**; post village in Doddridge County.

**Pack**; branch, a very small left-hand branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.

**Pack**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.

**Pack**; fork, a small left-hand branch of Rockhouse Fork of Dingus Run, a tributary to Guyandot River, in Logan County.

**Packs Ferry**; post village in Summers County.

**Pad**; fork, a small left-hand branch of Little Huff Creek, a tributary to Guyandot River, in Wyoming County.

**Pad**; post village in Roane County.

**Padds**; run, a left-hand branch of Lost Run in Taylor County.

**Paddy**; branch, a very small right-hand tributary to Kanawha River in Fayette County.

**Paddy**; branch, a right-hand branch of Trace Fork in Cabell County.

**Paddy**; mountain, a short ridge in Frederick and Shenandoah counties. Altitude, 2,500 to 3,000 feet.

**Paddy**; run, a small left-hand branch of Cedar Creek in Gilmer County.

**Paddys**; run, a right-hand branch of Saltlick Creek in Braxton County.

**Paddy Knob**; summit in Braxton County.

**Padenvalley**; post village in Wetzel County on the Baltimore and Ohio Railroad.

**Page**; post village in Putnam County.

**Paint**; branch, a right-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.

**Paint**; creek, a left-hand branch of Kanawha River in Kanawha, Fayette, and Raleigh counties.

**Paint**; creek, a large right-hand tributary to Kanawha River in Kanawha, Fayette, and Raleigh counties.

**Paint**; mountain on boundary line between Fayette and Raleigh counties.

**Paintcreek**; post village in Kanawha County on the Chesapeake and Ohio Railway. Altitude, 622 feet.

**Palace Ridge**; summit in the northern part of Randolph County.

**Palace Valley**; post village in Upshur County.

**Palmer**; post village in Braxton County on the Holly River and Addison Railway.

**Palser**; run, a small right-hand branch of Steer Run in Gilmer County.

**Pansy**; post village in Grant County.

**Panther**; branch, a very small left-hand tributary to Clear Fork of Coal River in Raleigh County.

**Panther**; branch, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.

**Panther**; creek, a small left-hand tributary to Gauley River in Nicholas County.

**Panther**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Panther**; creek, a left-hand branch of Tug Fork of Big Sandy River in McDowell County.

**Panther**; creek, a small right-hand tributary to Buckhannon River in Upshur County.

**Panther**; post village in McDowell County on the Norfolk and Western Railway.

**Panther**; run, a small right-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.

**Panther**; run, a small right-hand tributary to Little Kanawha River in Upshur County.

**Panther Camp**; fork, a small left-hand branch of Spring Creek, a tributary to Greenbrier River, in Greenbrier County.

**Panther Knob**; summit in Summers County.

**Panther Knob**; summit in Wyoming County.

**Panther Knob**; summit in Pendleton County.

**Panther Lick**; run, a small left-hand tributary to Elk River in Webster County.

**Panther Lick**; very small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Paola**; post village in Doddridge County.

**Paradise**; post village in Putnam County.

**Parchment Valley**; post village in Jackson County on the Baltimore and Ohio Railroad.

**Park**; gap in Fork Mountains caused by Beach Lick Run, a short branch of South Fork of Cherry River, in Greenbrier County.

**Parker**; creek, a small left-hand branch of Kiah Fork, a tributary to Twelvepole Creek, in Wayne County.

**Parkers**; post village in Doddridge County.

**Parkersburg**; county seat of Wood County on the Baltimore and Ohio, the Baltimore and Ohio Southwestern, and the Little Kanawha railroads. Altitude, 616 feet. Population, 11,703.

**Parrish**; post village in Pleasants County.

**Parsner**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Parsons**; county seat of Tucker County on the West Virginia Central and Pittsburg Railway.

**Pasco**; post village in Roane County.

**Pasture**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Patrick**; creek, a small left-hand branch of West Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Patrick**; peak, a knob of Wolf Creek Mountain in Monroe County.

- Patrick**; post village in Kanawha County.
- Patsey**; post village in Roane County.
- Patters**; run, a left-hand branch of Big Creek in Lincoln County.
- Patterson**; creek, right-hand branch of North Branch of Potomac River in Grant and Mineral counties.
- Patterson Creek**; mountain, a narrow ridge along the boundary line of Grant and Hardy counties. Altitude, 2,000 to 2,500 feet.
- Pattersons Depot**; post village in Mineral County.
- Patton**; knob in Taylor County.
- Patton**; post village in Monroe County.
- Paw Paw**; creek, a small left-hand branch of Monongahela River in Monongalia County.
- Pawpaw**; town in Morgan County on the Baltimore and Ohio Railroad. Population, 693.
- Payne Knob**; summit in Fayette County. Altitude, 2,804 feet.
- Payne Knob**, summit in Webster County. Altitude, 3,126 feet.
- Paynes**; branch, a small left-hand tributary to Five Mile Creek, a branch of East River, in Mercer County.
- Peabody**; post village in Wetzel County.
- Peach**; creek, a small right-hand branch of Guyandot River, a tributary to Ohio River, in Logan County.
- Peachtree**; branch, a small right-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Peachtree**; creek, a left-hand branch of Marsh Fork of Coal River in Raleigh County.
- Peachtree**; post village in Raleigh County.
- Peach Tree**; run, a right-hand tributary to Steer Run in Gilmer County.
- Peak Ridge**; mountains in Wyoming County.
- Pear**; post village in Raleigh County.
- Pearl**; mountain ridge in bend of Tilhance Creek in Berkeley County.
- Pearl**; post village in Nicholas County.
- Pearson**; branch, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Peck**; post village in Logan County. Altitude, 653 feet.
- Peckersrun**; post village in Upshur County.
- Peddler**; run, a right-hand branch of Simpson Run in Taylor County.
- Pedee**; fork, a small left-hand tributary to Rock Creek, a branch of Little Coal River, in Boone County.
- Pedlar**; post village in Monongalia County.
- Peeled Chestnut**; gap in Big Stone Ridge on boundary between McDowell and Mercer counties.
- Peel Tree**; post village in Barbour County.
- Peery Camp**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Peeryville**; post village in McDowell County located on Dry Fork, a large left-hand tributary to Tug Fork of Big Sandy River.
- Peet**; post village in Randolph County.
- Peewee**; post village in Wirt County.
- Pemberton**; post village in Raleigh County.
- Penbro**; post village in Webster County.
- Pence Springs**; post village in Summers County on the Chesapeake and Ohio Railway.
- Pendleton**; county, situated in the eastern part of the State, against the boundary of Virginia. Its surface is mountainous, consisting of alternations of valleys and

- ridges. It is drained northward by tributaries to the Potomac River. Area, 707 square miles. Population, 9,167—white, 9,044; negro, 123; foreign born, 6. County seat, Franklin. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Ohio River Railroad.
- Penfield**; branch, a very small left-hand tributary to New River in Fayette County.
- Peniel**; post village in Roane County.
- Pennsboro**; town in Ritchie County on the Baltimore and Ohio Railroad. Population, 738.
- Penrith**; village in Hancock County.
- Pentress**; post village in Monongalia County.
- Peora**; village in Harrison County.
- Pepper**; post village in Barbour County.
- Perkins**; fork, a head fork of Cedar Creek in Braxton County.
- Perry**; branch, a small left-hand tributary to Buffalo Creek, a branch of Elk River, in Clay and Nicholas counties.
- Perry**; post village in Hardy County.
- Perry Ridge**; short spur north of Cranberry River in Nicholas County.
- Persinger**; post village in Nicholas County.
- Persinger**; run, a small right-hand tributary to Gauley River in Nicholas County.
- Peru**; post village in Hardy County.
- Peter**; run, a small left-hand tributary to South Branch of Potomac River in Pendleton County.
- Peter Cove**; creek, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Peter Johnson**; run, a right-hand branch of Pritchett Creek in Marion County.
- Peters**; creek, a right-hand branch of Gauley River in Nicholas County.
- Peters**; creek, a right-hand branch of Little Wheeling Creek in Ohio County.
- Peters**; gap in Great Flat Top Mountain in Mercer County.
- Peters**; mountain, a long, narrow ridge in Monroe County, W. Va., and Alleghany County, Va.
- Peters**; mountain, a ridge in Monroe County.
- Peters**; mountain, a short ridge between North Fork and Moore Run, branches of Greenbrier River, in Pocahontas County.
- Petersburg**; post village and county seat of Grant County on South Branch of Potomac River.
- Peters Cave**; fork, a left-hand branch of Horse Creek, a tributary to Little Coal River, in Lincoln County.
- Peters Creek**; fork, a small left-hand branch of Hardway Branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.
- Peterstown**; town in Monroe County, situated on Rich Creek. Altitude, 1,745 feet. Population, 167.
- Petes**; fork, a very small right-hand branch of Falling Rock Creek, a tributary to Elk River, in Kanawha and Clay counties.
- Petroleum**; post village in Ritchie County on the Baltimore and Ohio Railroad. Altitude, 697 feet.
- Pettit**; post village in Randolph County.
- Pewee**; knob in Taylor County.
- Peytona**; post village in Boone County.
- Pharoah**; post village in Wayne County.
- Phillip Camp**; fork, a small tributary to Left Fork of Buckhannon River in Randolph County.
- Philippi**; county seat of Barbour County on the Baltimore and Ohio Railroad. Altitude, 1,192 feet. Population, 665.

- Phillips**; branch, a very small right-hand branch of Tug Fork of Chattarawha River, a tributary to Ohio River, in Logan County.
- Phillips**; run, a small left-hand tributary to Muddlety Creek, a branch of Gauley River, in Nicholas County.
- Philoah**; post village in Putnam County.
- Pickaway**; post village in Monroe County.
- Pickens**; post village in Randolph County on the Baltimore and Ohio Railroad.
- Pickle**; mountain, a short ridge west of the South Branch of the Potomac in Pendleton County. Altitude, 2,500 to 3,000 feet.
- Pickles**; fork, a small right-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Piedmont**; town in Mineral County on the Baltimore and Ohio and on the Cumberland and Pennsylvania railroads. Altitude, 933 feet. Population, 2,115.
- Piercy**; post village in Jackson County.
- Pigeon**; creek, a right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Pigeon**; creek, a very small right-hand tributary to Guyandot River in Wyoming County.
- Pigeon**; fork, a left-hand branch of Naul Creek in Braxton County.
- Pigeon**; post village in Roane County.
- Pigeon**; run, a right-hand branch of left fork of Steer Creek in Gilmer County.
- Pigeon**; run, a right-hand branch of Stony Creek, tributary to Greenbrier River, in Pocahontas County.
- Pigeon**; station in Logan County on the Norfolk and Western Railway and at junction of Pigeon Creek with Tug Fork of Big Sandy River. Altitude, 1,299 feet.
- Pigeon Knob**; summit in Lincoln County. Altitude, 1,354 feet.
- Pigeon Roost**; a summit in Wayne County. Altitude, 1,105 feet.
- Pigeon Roost**; branch, a small right-hand tributary to Spruce Fork of Little Coal River in Logan County.
- Pigeon Roost**; creek, a left-hand branch of Big Ugly Creek, a tributary to Guyandot River in Lincoln County.
- Pigeon Roost**; fork, a small left-hand branch of Lower Sleith Fork in Braxton County.
- Pigeon Roost**; fork, a small left-hand branch of Right Fork of Stone Coal Creek in Upshur County.
- Pigeon Roost**; fork, a small, indirect left-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.
- Pigeon Roost**; fork, a right-hand branch of Lick Creek, a tributary to Little Coal River, in Boone County.
- Pike**; post village in Ritchie County.
- Pilot**; triangulation station on Great Flat Top Mountain on boundary line between Wyoming and Mercer counties.
- Pinch**; creek, a small left-hand tributary to Elk River in Kanawha County.
- Pinch Gut**; creek, a small right-hand tributary to Glade Creek, a branch of New River, in Raleigh County.
- Pine**; creek, a left-hand tributary to Island Creek, a branch of Guyandot River, in Logan County.
- Pine**; run, a right-hand branch of Indian Fork in Gilmer County.
- Pine**; run, a small right-hand tributary to Peter Creek, a branch of Gauley River, in Nicholas County.
- Pinebluff**; village in Harrison County.
- Pine Glade**; run, a small right-hand tributary to Gauley River in Webster County.
- Pinegrove**; post village in Wetzel County on the Baltimore and Ohio Railroad.



**Pine Grove**; run, a small right-hand tributary to Williams River in Webster County.

**Pineville**; post village in Wyoming County.

**Piney**; creek, a left-hand branch of New River in Raleigh County.

**Piney**; creek, a small right-hand branch of Meadow River, a tributary to Gauley River, in Greenbrier and Nicholas counties.

**Piney**; fork, a left-hand branch of Fishing Creek in Wetzel County.

**Piney**; post village in Wetzel County on the Ohio Central Lines. Altitude, 1,120 feet.

**Piney**; run, a right-hand branch of Pritchett Creek in Marion County.

**Piney Mount**; triangulation station in Cabell County. Altitude, 1,115 feet.

**Piney Swamp**; run, a small right-hand tributary to North Branch of Potomac River in Mineral County.

**Pink**; post village in Calhoun County.

**Pinkerton**; knob in Third Hill Mountain in Berkeley County. Elevation, 1,700 feet.

**Pinnacle**; creek, a left-hand branch of Guyandot River in Wyoming County.

**Pinnacle**; hill in Mercer County.

**Pinnacle**; triangulation station in Allegheny Front in Mineral County. Altitude, 3,827 feet.

**Pinoak**; post village in Mercer County.

**Pioneer**; post village in Marshall County.

**Pious**; mountain ridge in Morgan County. Elevation, 800 feet.

**Piper**; fork, a small right-hand tributary to Crooked Fork in Braxton County.

**Pipestem**; creek, a small left-hand tributary to New River in Summers County.

**Pipestem**; post village in Summers County.

**Pipestem Knob**; summit in Mercer County.

**Pisgah**; mount, a summit in Clay County. Altitude, 1,683 feet.

**Pisgah**; post village in Preston County.

**Pisgah**; run, a very small left-hand tributary to Elk River, a branch of Kanawha River, in Clay County.

**Pittman**; post village in Fayette County.

**Plankcabin**; creek, a small left-hand branch of Second Creek, a tributary to Greenbrier River, in Monroe County.

**Plant**; post village in Lewis County.

**Plantation**; fork, a left-hand tributary to O'Brien Fork in Braxton County.

**Plantation**; fork, a head fork of Right Fork of Steer Creek in Braxton County.

**Pleasant**; creek, a left-hand branch of Tygart Valley River in Taylor County.

**Pleasant**; run, a small left-hand tributary to Left Fork of Middle Fork of Tygart Valley River in Randolph County.

**Pleasant**; run, a small left-hand tributary to Shavers Fork of Cheat River in Randolph County.

**Pleasantdale**; post village in Hampshire County.

**Pleasanthill**; post village in Preston County.

**Pleasant Retreat**; post village in Clay County.

**Pleasantrun**; post village in Tucker County.

**Pleasants**; county, situated in the northwestern part of the State, bordering on the Ohio River. Area, 142 square miles. Population, 9,341—white, 9,335; negro, 6; foreign born, 83. County seat, Saint Marys. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Ohio River Railroad.

**Pleasants**; post village in Pleasants County.

**Pleasant Valley**; town and post village in Marshall County. Population, 180.

**Pleasantview**; post village in Jackson County on the Baltimore and Ohio Railroad.

- Pliny**; post village in Putnam County.
- Plum**; fork, a right-hand branch of Grove Creek in Clay County.
- Plum**; post village in Tyler County.
- Plum**; run, a left-hand branch of Buffalo Creek in Marion County.
- Plum**; run, a right-hand branch of Tygart Valley River in Taylor County.
- Plum Orchard**; creek, a small right-hand branch of Paint Creek, a tributary to Kanawha River, in Fayette County.
- Plummer**; knob in Taylor County. Elevation, 1,500 feet.
- Plummer**; run, a right-hand branch of Booths Creek in Taylor County.
- Pluto**; post village in Raleigh County.
- Plymah**; branch, a right-hand branch of Twelvepole Creek in Wayne County.
- Plymouth**; post village in Putnam County on the Ohio Central Lines.
- Poca**; post village in Putnam County on the Ohio Central Lines. Altitude, 573 feet.
- Poca**; river, a small left-hand tributary to Ohio River rising in Roane County.
- Pocahontas**; county, situated in the eastern part of the State. Its surface is mountainous, consisting of a broken plateau, deeply dissected. It is drained by Greenbrier River. Area, 858 square miles. Population, 8,572—white, 7,947; negro, 625; foreign born, 345. County seat, Marlinton. The mean magnetic declination in 1900 was 2° 5'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°.
- Pocotaligo**; post village in Kanawha County.
- Pocotaligo**; river, a right-hand branch of Kanawha River in Putnam, Kanawha, and Roane counties.
- Pocosin**; fork, a small right-hand branch of Rich Creek, a tributary to Bluestone River.
- Poindexter**; branch, a small left-hand tributary to Hurricane Creek, a branch of Kanawha River, in Putnam County.
- Point**; mountain, a short ridge in Greenbrier County. Altitude, 3,500 feet.
- Point**; mountain, a broken, mountainous range in Webster and Randolph counties.
- Point**; mountain, a short ridge in Greenbrier and Pocahontas counties.
- Point**; mountain, a short ridge between Back Fork of Elk River and Elk River in Webster County.
- Point**; run, a left-hand branch of Little Wheeling Creek in Ohio County.
- Point Lick**; fork, a left-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Point Mountain**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.
- Point Pleasant**; county seat of Mason County on the Baltimore and Ohio and the Ohio Central railroads. Altitude, 563 feet. Population, 1,934.
- Points**; post village in Hampshire County.
- Pointy Knob**; summit in Tucker County. Altitude, 4,286 feet.
- Polandale**; post village in Wood County.
- Polard**; post village in Tyler County.
- Polemic**; run, a small left-hand tributary to Little Birch River in Braxton County.
- Poley Ridge**; short spur west of Greenbrier River in Greenbrier County. Altitude, 2,500 feet.
- Pollock**; mountain, a summit in Greenbrier County. Altitude, 3,900 feet.
- Pompeys Knob**; summit in Webster County north of Gauley River.
- Pond**; fork, a small left-hand branch of Middle Fork of Blue Creek, a tributary to Elk River, in Kanawha County.
- Pond**; fork, a right-hand head fork of Little Coal River, a branch of Coal River, in Boone County.
- Pond Gap**; height in Kanawha County.
- Pondgap**; post village in Kanawha County.

- Pond Lick**; creek, a small left-hand tributary to Howards Creek, a branch of Greenbrier River, in Greenbrier County.
- Pondlick**; post village in Mason County on the West Virginia Central and Pittsburgh Railway.
- Pond Mill**; run, a small left-hand tributary to North Fork of Potomac River in Pendleton County.
- Pond Range**; short ridge in the central part of Pendleton County. Altitude, 2,500 to 3,000 feet.
- Pond Trace**; branch, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Logan County.
- Pool**; post village in Nicholas County.
- Poplar**; creek, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.
- Poplar**; fork, a small left-hand tributary to Kanawha River in Putnam County.
- Poplar**; post village in Webster County on the Baltimore and Ohio Railroad.
- Poplar Lick**; small left-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Poppa**; post village in Wayne County.
- Porter**; post village in Clay County on the Charleston, Clendennin and Sutton and the Porters Creek and Gauley railroads.
- Porter Knob**; summit in Cabell County. Altitude, 1,252 feet.
- Porter Knob**; summit in Wayne County. Altitude, 1,407 feet.
- Porters**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Porters**; creek, a left-hand tributary to Elk River in Clay County.
- Porters Falls**; post village in Wetzel County on the Baltimore and Ohio Railroad.
- Portersville**; post village in Lincoln County.
- Porterwood**; post village in Tucker County on the West Virginia Central and Pittsburgh Railway.
- Posey**; run, a small right-hand branch of Oil Creek in Braxton County.
- Pot**; branch, a small left-hand tributary to Trace Fork of Davis Creek, a branch of Kanawha River, in Kanawha County.
- Potato**; branch, a very small right-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- Potato**; hill, a summit on boundary line between Raleigh and Fayette counties. Altitude, 3,256 feet.
- Potato**; hill, a summit in Webster County.
- Potato Hill**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.
- Potato Hole Knob**; summit in Webster County.
- Potomac**; river, heading in the northeastern part of the State, in two branches, North and South. North Branch heads near Fairfax Stone and flows northeast, forming a part of the north boundary of the State. After its junction with South Branch, some miles below Cumberland, it continues along the north boundary to Harpers Ferry, the easternmost point of the State.
- Potomac**; village in Ohio County.
- Pound**; fork, a very small right-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.
- Pound Mill**; branch, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Pound Mill**; run, a small left-hand tributary to Valley River in Randolph County.
- Powell**; branch, a small left-hand tributary to Spruce Fork of Little Coal River, a branch of Coal River, in Boone County.

**Powell**; creek, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.

**Powell**; fork, a small left-hand tributary to Leatherwood Fork of Elk River in Webster County.

**Powell**; mountains, a short ridge in Nicholas County. Its highest peak is 2,316 feet.

**Powell Knob**; summit in Gilmer County. Altitude, 1,460 feet.

**Powells**; post village in Marion County on the Baltimore and Ohio Railroad.

**Powellton**; fork, a right-hand branch of Armstrong Creek, a tributary to Kanawha River, in Fayette County.

**Powellton**; town in Fayette County on the Powellton and Pocahontas Railway and on Powellton Fork of Kanawha River. Population, 503. Altitude, 904 feet.

**Powers**; post village in Wood County.

**Powhatan**; post village in McDowell County on the Norfolk and Western Railway and on South Fork of Elkhorn Creek.

**Powley**; creek, a small right-hand tributary to Greenbrier River in Summers County.

**Pratt**; post village in Kanawha County, on the Chesapeake and Ohio Railway.

**Press Kincaid**; branch, a very small right-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.

**Preston**; county, situated in the northern part of the State on the Allegheny Plateau, here not greatly dissected, and having an average elevation of about 3,000 feet. Area, 671 square miles. Population, 22,727—white, 22,565; negro, 162; foreign born, 482. County seat, Kingwood. The mean magnetic declination in 1900 was 3° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 45° to 50°. The county is traversed by the West Virginia Northern and the Baltimore and Ohio railroads.

**Preston**; post village in Wayne County.

**Prestonia**; post village in Webster County.

**Pretty Ridge**; mountains in Wyoming County.

**Pretty Ridge**; short spur of North Fork Mountain in Pendleton County. Elevation, 2,000 feet.

**Price**; branch, a very small right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.

**Price**; branch, a very small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Price**; fork, a small left-hand tributary to Hominy Creek, a branch of Gauley River, in Nicholas and Greenbrier counties.

**Pride**; post village in Mercer County.

**Priestly**; post village in Lincoln County.

**Prince**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,188 feet.

**Princeton**; county seat of Mercer County. Altitude, 2,450 feet.

**Pringle**; fork, a small left-hand tributary to Right Fork of Stone Coal Creek in Upshur County.

**Pringle**; run, a small left-hand tributary to Cheat River in Preston County.

**Pritchard**; post village in Ritchie County.

**Procious**; post village in Clay County.

**Proctor**; post village in Wetzel County on the Baltimore and Ohio Railroad.

**Proctors**; creek, a small left-hand branch of Ohio River in Wetzel County.

**Progress**; post village in Braxton County.

**Props**; gap in Long Ridge, caused by a small right-hand branch of the South Branch of Potomac River, in Pendleton County.

**Prospect Valley**; village in Harrison County.

**Prosperity**; post village in Raleigh County.

**Providence**; post village in Jackson County.

**Pruett**; branch, a very small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Pruntytown**; village in Taylor County.

**Pugh**; post village in Webster County.

**Pullman**; post village in Ritchie County.

**Puncheon Camp**; branch, a very small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.

**Purgitsville**; post village in Hampshire County.

**Pursley**; post village in Tyler County.

**Push**; post village in Doddridge County.

**Putnam**; county situated in the western part of the State on the lower slopes of the Allegheny Plateau; it is traversed by Kanawha River, which drains it. Area, 353 square miles. Population, 17,330—white, 16,951; negro, 379; foreign born, 107. County seat near Winfield. The mean magnetic declination in 1900 was  $1^{\circ} 15'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Kanawha and Michigan and the Chesapeake and Ohio railways.

**Pyle**; mountain, a short ridge west of Greenbrier River in Pocahontas County. Altitude, 2,500 to 3,275 feet, the latter being the height of one peak.

**Pyles**; fork, a small left-hand branch of Monongahela River in Monongalia County.

**Quaker Knob**; summit in Webster County. Altitude, 2,722 feet.

**Queens**; post village in Upshur County.

**Queens Camp**; fork, a small left-hand branch of Milam Creek, a tributary to East Fork of Twelvepole Creek, in Wayne County.

**Queen Shoal**; creek, a small left-hand tributary to Elk River in Clay County.

**Queens Ridge**; post village in Wayne County.

**Queer**; branch, a small left-hand tributary to Cranberry River in Webster County.

**Quiet Dell**; post village in Harrison County.

**Quincy**; post village in Kanawha County.

**Quinnimont**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,195 feet.

**Racine**; post village in Boone County. Altitude, 665 feet.

**Racoon**; creek, a small right-hand tributary to Teter Creek, a branch of Tygarts Valley River, in Barbour County.

**Raccoon**; creek, a right-hand tributary to Valley River in Preston County.

**Raccoon**; creek, a small right-hand branch of Beech Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Racy**; post village in Ritchie County.

**Radnor**; post village in Wayne County on the Norfolk and Western Railway.

**Rafe**; run, a very small left-hand tributary to Valley River in Randolph County.

**Ragland**; post village in Mingo County.

**Raider**; fork, a small left-hand tributary to Twenty Mile Creek in Nicholas County.

**Raines**; fork, a very small left-hand branch of Sycamore Creek, a tributary to Clear Fork of Coal River, in Raleigh County.

**Raleigh**; county, situated in the southern part of the State, on the Allegheny Plateau, here having an average elevation of 2,500 feet, and is not greatly dissected. It is drained by tributaries of the Kanawha and New rivers. Area, 560 square miles. Population, 12,436—white, 12,076; negro, 360; foreign born, 33. County seat, Beckley. The mean magnetic declination in 1900 was  $1^{\circ} 15'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ .

**Raleigh**; post village of Raleigh County on the Chesapeake and Ohio Railway. Altitude, 2,440 feet.

- Raleman**; mountain, a short ridge in Pendleton County. Altitude, 3,000 feet.
- Ralph**; branch, a very small right-hand tributary to Clear Fork, a branch of Guy-andot River, in Wyoming County.
- Ralston**; run, a small left-hand tributary to Valley River in Randolph County.
- Ramsey**; post village in Fayette County.
- Rams Horn**; spur of Allegheny Front in Pocahontas County.
- Randall**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Randolph**; county, situated in the eastern part of the State. The surface is entirely mountainous, the western part lying on the Allegheny Plateau, and the eastern part consisting of heavy parallel ridges, trending northeast and southwest, separated by limestone valleys. It is drained by tributaries to the North Branch of the Potomac and to the Monongahela River. Area, 1,086 square miles. Population, 17,670—white, 17,149; negro, 519; foreign born, 698. County seat, Elkins. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°. The county is traversed by the West Virginia Central and Pittsburg Railway.
- Ranger**; post village in Lincoln County.
- Ranger**; run, a left-hand branch of West Virginia Fork of Dunkard Creek in Monongalia County.
- Ratcliff**; run, a small left-hand tributary to Buckhannon River in Upshur County.
- Rattlesnake Draft**; very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Ravenrock**; post village in Pleasants County on the Baltimore and Ohio Railroad.
- Ravens Eye**; post village in Fayette County.
- Ravenswood**; town in Jackson County. Population, 1,074. Altitude, 544 feet.
- Raymond**; run, a right-hand tributary of North Fork of Fishing Creek in Wetzel County.
- Raymond City**; post village in Putnam County on the Ohio Central Lines.
- Read**; fork, a left-hand tributary to Grass Run in Gilmer County.
- Reader**; creek, a right-hand branch of Fishing Creek in Wetzel County.
- Reader**; post village in Wetzel County on the Baltimore and Ohio Railroad.
- Real Gap**; height in Little Mountain in Grant County.
- Red**; creek, a right-hand tributary to Dry Fork of Cheat River in Tucker and Randolph counties.
- Redbird**; post village in Raleigh County.
- Red Bridge**; run, a small left-hand tributary to Shavers Fork of Cheat River in Randolph County.
- Redcreek**; post village in Tucker County.
- Redhill**; post village in Wood County.
- Redhouse Shoals**; post village in Putnam County on the Ohio Central Lines.
- Redknob**; post village in Roane County.
- Red Lick**; mountain, a short ridge in Pocahontas County. The altitude of one peak is 4,671 feet.
- Red Lick**; small left-hand tributary to Oil Creek in Lewis County.
- Redmud**; post village in Mason County.
- Red Oak**; creek, a small right-hand tributary to North Branch of Potomac River in Grant County.
- Red Oak Knob**; summit in Webster County. Altitude, 3,750 feet.
- Red Oak Ridge**; mountains in Mercer County.
- Red River**; fork, a small left-hand branch of Fourmile Creek, a tributary to Guy-andot River, in Lincoln County.
- Redstar**; station in Fayette County on the Chesapeake and Ohio Railway and on Dunloup Creek, a tributary to New River.
- Red Sulphur Springs**; post village in Monroe County.

- Reed**; creek, a left-hand tributary to South Branch of Potomac River in Pendleton County.
- Reeds**; creek, a small left-hand tributary to North Fork of Potomac River in Pendleton County.
- Reedsville**; post village in Preston County.
- Reedy**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Reedy**; branch, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Reedy**; town in Roane County on the Baltimore and Ohio Railroad. Population, 300.
- Reedyripple**; post village in Wirt County.
- Reedyville**; post village in Roane County.
- Reeses Mill**; post village in Mineral County.
- Reid**; post village in Cabell County.
- Removal**; post village in Webster County.
- Bena**; post village in Putnam County.
- Reid**; post village in Fayette County.
- Renicks Valley**; post village in Greenbrier County, on the Chesapeake and Ohio Railway.
- Renius**; post village in Wood County.
- Replete**; post village in Webster County.
- Reuben**; right-hand branch of Pritchett Creek in Marion County.
- Revel**; post village in Gilmer County.
- Revere**; post village in Gilmer County.
- Rex**; post village in Putnam County.
- Rezrode**; post village in Pendleton County.
- Reynolds**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Reynoldsville**; post village in Harrison County.
- Rhine**; fork, a head tributary to Youghiogheny River in Preston County.
- Rice**; post village in Wayne County.
- Rices**; run, a left-hand branch of Garrison Run in Ohio County.
- Rich**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Rich**; creek, a very small left-hand tributary to Guyandot River in Wyoming County.
- Rich**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Rich**; creek, a left-hand tributary to Bluestone River in Mercer County.
- Rich**; creek, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Rich**; creek, a small right-hand tributary to New River in Monroe County.
- Rich**; knob in Cabell County. Altitude, 1,047 feet.
- Rich**; mountain, a ridge lying west of Valley River in the northwestern part of Randolph County.
- Rich**; mountain, a ridge lying east of Laurel Fork of Cheat River in the eastern part of Randolph County.
- Rich**; post village in Logan County.
- Richardson**; post village in Calhoun County.
- Rich Knob**; summit in Greenbrier County. Altitude, 3,848 feet.
- Richlands**; post village in Greenbrier County.
- Rich Mountain**; post village in Randolph County.
- Rich Patch**; creek, a small left-hand tributary to Howards Creek, a branch of Greenbrier River, in Greenbrier County.

- Richwood**; post village in Nicholas County, on the Baltimore and Ohio Railroad.
- Richwood**; run, a right-hand branch of South Fork of Fishing Creek in Wetzel County.
- Riddle**; branch, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Riddleboch**; run, a small right-hand tributary to South Fork of Potomac River in Hardy County.
- Ridersville**; post village in Morgan County.
- Ridge**; post village in Morgan County.
- Ridgedale**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Ridgeley**; post village in Mineral County on the West Virginia Central and Pittsburg Railway.
- Ridgeville**; post village in Mineral County.
- Ridgeway**; village in Berkeley County on the Cumberland Valley Railroad.
- Rifle**; branch, an indirect right-hand tributary to Tommy Creek, a head fork of Guyandot River, in Raleigh County.
- Rifle**; run, a small right-hand tributary to Little Kanawha River in Braxton County.
- Riffles**; creek, a small right-hand tributary to Valley River in Randolph County.
- Riggs**; branch, a very small right-hand tributary to Kanawha River in Fayette County.
- Rilla**; post village in Calhoun County.
- Rinehart**; post village in Harrison County.
- Riney**; mountain in Cabell County. Altitude, 1,107 feet.
- Ring**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Rio**; post village in Hampshire County.
- Ripley**; county seat of Jackson County on the Baltimore and Ohio Railroad. Population, 579.
- Rippon**; post village in Jefferson County on the Norfolk and Western Railway. Altitude, 516 feet.
- Rising Sun**; branch, a small left-hand tributary to Little Bluestone Creek, a branch of Bluestone River, in Summers County.
- Ritchie**; county, situated in the western part of the State, near the foot of the Allegheny Plateau. Area, 457 square miles. Population, 18,901—white, 18,875; negro, 26; foreign born, 120; county seat, Harrisville. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.
- Ritter**; post village in McDowell County at junction of upper Shannon Branch with Tug Fork of Big Sandy River.
- River**; fork, a left-hand tributary to Coal River in Boone County.
- River**; run, a left-hand branch of Tygart Valley River in Marion County.
- River Laurel**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- River Road**; run, a very small right-hand tributary to Greenbrier River in Summers County.
- Riverside**; post village in Kanawha County.
- Riverton**; post village in Pendleton County.
- Rivesville**; town in Marion County. Population, 164.
- Roach**; branch, a small left-hand tributary to West Fork, a branch of Pond Fork of Little Coal Creek, in Boone County.
- Roach**; post village in Cabell County.
- Road**; branch, a very small left-hand tributary to Big Ugly Creek, a branch of Guyandot River, in Lincoln County.



- Road**; branch, a small right-hand tributary to Cranberry River in Webster County.
- Road**; branch, a very small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Road**; fork, a small left-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Road**; fork, a small left-hand branch of Peters Cave Fork of Horse Creek, a tributary to Little Coal River, in Lincoln County.
- Road**; fork, a left-hand tributary to Trace Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Road**; fork, a small left-hand branch of Big Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Road**; fork, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Road**; fork, a small left-hand tributary to Buffalo Creek, a branch of Elk River, in Clay and Nicholas counties.
- Road**; fork, a small right-hand branch of Seng Camp Creek, a tributary to Spruce Fork of Little Coal River, in Logan County.
- Road**; fork, a small right-hand branch of Fuqua Creek, a tributary to Coal River, in Lincoln County.
- Road**; fork, a small right-hand branch of Rock Camp Fork of Twentymile Creek, a tributary to Gauley River, in Nicholas and Clay counties.
- Road**; fork, a small right-hand branch of Left Fork of Witchers Creek, a tributary to Kanawha River, in Kanawha County.
- Road**; fork, a right-hand branch of Grove Creek in Clay County.
- Road**; run, a small left-hand branch of Oil Creek in Braxton County.
- Road**; run, a small right-hand tributary to Little Birch River in Braxton County.
- Roane**; county, situated in the western part of the State near the foot of the Allegheny Plateau. Area, 547 square miles. Population, 19,852—white, 19,820; negro, 32; foreign born, 52. County seat, Spencer. The mean magnetic declination in 1900 was 1° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Ohio River Railroad.
- Roanoke**; post village in Lewis County on the Baltimore and Ohio Railroad. Altitude, 1,053 feet.
- Roaring**; creek, a small left-hand tributary to Seneca Creek, a branch of North Fork of Potomac River, in Pendleton County.
- Roaring**; creek, a small right-hand branch of Valley River in Randolph County.
- Roaring**; plains, summit near the Allegheny Front, lying on the boundary line between Randolph and Pendleton counties.
- Robbins**; fork, a small left-hand branch of Spring Creek, a tributary to Greenbrier River, in Greenbrier County.
- Roberts**; post village in Doddridge County.
- Roberts**; run, a left-hand branch of Long Drain in Wetzel County.
- Robertsburg**; post village in Putnam County on the Ohio Central Lines.
- Robertson**; right-hand branch of Tygarts Valley River in Marion County.
- Robinette**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.
- Robinette**; branch, a very small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.
- Robinson**; branch, a very small left-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Robinson**; creek, a small right-hand tributary to Pond Fork of Little Coal River, a branch of Coal River, in Boone County.

- Robinson**; fork, a left-hand tributary to Buffalo Creek, a branch of Elk River, in Nicholas and Clay counties.
- Robinson**; fork, a small left-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Robinson**; run, a left-hand branch of Monongahela River in Monongalia County.
- Robinson**; run, a small left-hand branch of the Right Fork of Holly River in Braxton County.
- Robinson**; run, a right-hand branch of Lunice Creek, a tributary to South Branch of Potomac River, in Grant County.
- Robinson Gap**; height in Grant County.
- Robinsons Mill**; post village in Wetzel County.
- Robson**; post village in Fayette County.
- Rock**; branch, a very small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Rock**; branch, a small left-hand tributary to Beaver Creek, a branch of Piney Creek, in Raleigh County.
- Rock**; creek, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Rock**; creek, a right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Rock**; post village in Mercer County.
- Rock**; run, a small left-hand tributary to Greenbrier River in Pocahontas County.
- Rock**; run, a right-hand branch of Sand Fork in Lewis County.
- Rock Camp**; branch, a small left-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Rock Camp**; creek, a small, indirect left-hand tributary to Indian Creek in Monroe County.
- Rock Camp**; fork, a right-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas and Clay counties.
- Rock Camp**; fork, a right-hand branch of Bell Creek, a tributary to Gauley River, in Clay County.
- Rock Camp**; fork, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Rock Camp**; mountain, a short ridge in Greenbrier County.
- Rockcamp**; post village in Monroe County.
- Rock Camp**; run, a small left-hand branch of Spring Creek, a tributary to Greenbrier River, in Greenbrier County.
- Rock Camp**; run, a small right-hand tributary to Elk River in Braxton County.
- Rock Camp**; run, a very small right-hand tributary to Gauley River in Nicholas County.
- Rock Camp**; run, a left-hand branch of Tanner Creek in Gilmer County.
- Rock Camp Knob**; summit in Greenbrier County.
- Rock Castle**; creek, a small right-hand branch of Guyandot River in Wyoming County.
- Rockcastle**; post village in Jackson County.
- Rockcave**; post village in Upshur County.
- Rockford**; post village in Harrison County.
- Rockgap**; post village in Morgan County.
- Rock House**; branch, a very small left-hand tributary to Gauley River in Webster County.
- Rockhouse**; branch, a small left-hand tributary to Tug River in McDowell County.
- Rockhouse**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.

- Rockhouse**; branch, a small left-hand branch of Road Fork, a tributary to Trace Fork of Mud River, in Lincoln County.
- Rockhouse**; branch, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Rockhouse**; branch, a small right-hand tributary to Elkhorn Creek in McDowell County.
- Rockhouse**; branch, a very small right-hand tributary to Island Creek, a branch of Guyandot River, in Logan County.
- Rockhouse**; creek, a small left-hand branch of Mud Fork of Guyandot River, a tributary to Ohio River, in Logan County.
- Rockhouse**; creek, a very small left-hand tributary to Spruce Fork of Little Coal River in Logan County.
- Rockhouse**; creek, a small right-hand branch of Clear Fork, a tributary to Coal River, in Raleigh County.
- Rockhouse**; fork, a small left-hand branch of Big Hart Creek, a tributary to Guyandot River, in Logan County.
- Rockhouse**; fork, a small left-hand tributary to Clear Fork of Guyandot River in Wyoming County.
- Rockhouse**; fork, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Rockhouse**; fork, a right-hand tributary to Pigeon Creek, a branch of Tug Fork of Big Sandy River, in Logan County.
- Rockhouse**; fork, a head fork of Dingus Run, a tributary to Guyandot River, in Logan County.
- Rockland**; post village in Hardy County on the Chesapeake and Ohio Railway.
- Rocklick**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.
- Rock Lick**; a small left-hand branch of Arbuckle Creek, a tributary to New River, in Fayette County.
- Rock Lick**; a small right-hand tributary to Williams River in Webster County.
- Rocklick**; fork; a small left-hand tributary to Leatherwood Creek, a small branch of Elk River, in Clay County.
- Rocklick**; post village in Marshall County.
- Rocklick**; run, a right-hand branch of Buffalo Creek in Marion County.
- Rock Narrow**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Rockoak**; post village in Hardy County.
- Rockport**; post village in Wood County.
- Rockruffle**; run, a right-hand tributary of Little Kanawha River in Gilmer County.
- Rocksdale**; post village in Calhoun County.
- Rockview**; post village in Wyoming County.
- Rockville**; post village in Preston County.
- Rocky**; fork, a left-hand branch of Pocotaligo River, a tributary to Kanawha River, in Kanawha County.
- Rocky**; fork, a left-hand tributary to Indian Fork in Gilmer and Lewis counties.
- Rocky**; run, a very small left-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Rocky**; run, a small left-hand tributary to Buckhannon River in Upshur County.
- Rocky**; run, a small right-hand tributary to Williams River in Webster County.
- Rocky**; run, a small right-hand branch of Thorn Run, a tributary to South Branch of Potomac River, in Pendleton County.
- Rockyfork**; post village in Kanawha County.
- Rocky Knob**; summit in Putnam County. Altitude, 1,170 feet.
- Rodamers**; post village in Preston County.

- Roderfield**; post village in McDowell County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Rodgers**; mountain, a summit in Pocahontas County. Altitude, 3,176 feet.
- Roe**; post village in Kanawha County.
- Rohr**; post village in Preston County.
- Roller**; fork, a small right-hand branch of Kiah Fork, a tributary to Twelvepole Creek, in Wayne County.
- Rollins**; post village in Mason County.
- Rome**; post village in Kanawha County.
- Romines Mills**; post village in Harrison County.
- Romney**; county seat of Hampshire County on the Baltimore and Ohio Railroad. Population, 580.
- Romont**; post village in Fayette County.
- Ronceverte**; town in Greenbrier County on Greenbrier River and on the Chesapeake and Ohio Railway. Population, 968. Altitude, 1,663 feet.
- Ronda**; post village in Kanawha County.
- Roneyspoint**; post village in Ohio County on the Baltimore and Ohio Railroad. Altitude, 829 feet.
- Roneyspoint**; run, a right-hand branch of Little Wheeling Creek in Ohio County.
- Roek**; branch, a very small right-hand tributary to Left Fork of Mud River in Lincoln County.
- Roose**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Rorebagh**; run, a small right-hand tributary to South Fork of Potomac River in Hardy County.
- Rosbysrock**; post village in Marshall County. Altitude, 787 feet.
- Rose**; branch, a very small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Rosedale**; post village in Braxton County.
- Rosen**; creek, a small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.
- Roseville**; post village in Fayette County.
- Rosina**; post village in Kanawha County.
- Ross**; post village in Wetzel County.
- Ross**; run, a small right-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Rough**; run, a small right-hand tributary to Cranberry River in Webster County.
- Rough**; run, a small right-hand tributary to South Fork of Potomac River in Pendleton County.
- Rough**; run, a small right-hand tributary to Left Fork of Middle Fork of Valley River in Randolph County.
- Rough Gap**; run, a very small right-hand tributary to Elk River in Randolph County.
- Round Bottom**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Roundbottom**; post village in Wayne County on the Baltimore and Ohio Railroad.
- Roundknob**; post village in Putnam County.
- Round Knob**; summit in Pocahontas County.
- Round Knob**; summit in Raleigh County.
- Round Knob**; summit in Randolph County.
- Rover**; post village in Wirt County.
- Rowlesburg**; town in Preston County on the Baltimore and Ohio Railroad. Altitude, 1,402 feet. Population, 652.

- Boxalana**; post village in Roane County.
- Boy**; post village in Roane County.
- Rubens**; branch, a left-hand branch of Buck Fork of Twelvepole Creek in Wayne County.
- Bucker**; branch, a very small right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Buckman**; post village in Hampshire County.
- Buddle**; post village in Pendleton County.
- Buffner**; branch, a small left-hand tributary to Little Sandy Creek, a small branch of Elk River, in Kanawha County.
- Buffner**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Bugger**; run, a small left-hand tributary to Right Fork of Buckhannon River in Upshur County.
- Bum**; creek, a small right-hand tributary to Guyandot River in Logan County.
- Rupert**; post village in Greenbrier County.
- Buraldale**; post village in Upshur County.
- Rush**; creek, a very small left-hand tributary to Kanawha River in Kanawha County.
- Rush**; fork, a small right-hand tributary to Elk River in Braxton County.
- Rush**; run, a small left-hand tributary to Monongahela River in Lewis County.
- Rush**; run, a very small left-hand tributary to New River in Fayette County.
- Rush Knob**; summit in Lewis County. Altitude, 1,642 feet.
- Rushrun**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River.
- Rushville**; post village in Roane County.
- Rusk**; post village in Ritchie County.
- Russell**; creek, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Russellville**; post village in Fayette County. Altitude, 1,092 feet.
- Russet**; post village in Calhoun County.
- Ruth**; post village in Kanawha County.
- Rutherford**; post village in Ritchie County on the Cairo and Kanawha Valley Railroad.
- Ryan**; post village in Roane County.
- Rye**; post village in Wood County.
- Rymer**; village in Marion County.
- Sago**; post village in Upshur County on the Baltimore and Ohio Railroad. Altitude, 1,425 feet.
- Saint Albans**; town in Kanawha County on the Chesapeake and Ohio Railroad. Population, 816. Altitude, 593 feet.
- Saint Clara**; post village in Doddridge County.
- Saint Cloud**; post village in Monongalia County.
- Saint George**; town in Tucker County. Population, 152.
- Saint Joseph**; post village in Marshall County.
- Saint Leo**; post village in Monongalia County.
- Saint Marys**; county seat of Pleasants County on the Baltimore and Ohio Railroad. Population, 825.
- Salama**; post village in Pleasants County on the Baltimore and Ohio Railroad.
- Salem**; town in Harrison County on the Baltimore and Ohio Railroad. Population, 746.
- Sally**; run, a small right-hand tributary to Gauley River in Webster County.
- Salt Block**; run, a small right-hand tributary to Left Fork of Right Fork of Buckhannon River in Randolph County.

**Salt Lick;** branch, a very small left-hand tributary to New River in Fayette County.

**Salt Lick;** fork, a left-hand branch of Little Kanawha River in Braxton County.

**Salt Lick;** run, a small left-hand tributary to Leading Creek in Randolph County.

**Saltlick Bridge;** post village in Braxton County.

**Salt Rock;** post village in Cabell County on the Chesapeake and Ohio Railway.

**Salt Sulphur;** branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.

**Salt Sulphur Springs;** post village in Monroe County.

**Saltwell;** village in Harrison County.

**Sam;** branch, a very small right-hand tributary to Guyandot River in Wyoming County.

**Sam;** branch, a small right-hand branch of Big Clear Creek, a tributary to Meadow River, in Greenbrier County.

**Samaria;** post village in Marion County.

**Sammy;** run, a left-hand branch of Sand Fork in Lewis County.

**Samp;** post village in Webster County.

**Sam Ridge;** short spur between Big Clear Creek and its branch, Sam Creek, in Greenbrier County.

**Sancho;** post village in Tyler County.

**Sand;** branch, a very small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.

**Sand;** creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.

**Sand;** fork, a small left-hand tributary to Middle Fork of Mud River, a branch of Guyandot River, in Lincoln County.

**Sand;** fork, a small right-hand branch of Paint Creek, a tributary to Kanawha River, in Raleigh County.

**Sand;** fork, a right-hand branch of West Fork of Monongahela River in Lewis County.

**Sand;** fork, a small right-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.

**Sand;** fork, a right-hand branch of Little Kanawha River in Lewis and Gilmer counties. It rises in Lewis County and flows southwestward to its junction with Sand Fork in Gilmer County.

**Sand;** river, a small right-hand tributary to Gauley River in Webster County.

**Sand;** run, a very small right-hand tributary to Elk River, a large branch of Kanawha River, in Kanawha County.

**Sand;** run, a small right-hand tributary to French Creek in Upshur County.

**Sand;** run, a right-hand head fork of Laurel Fork of French Creek in Upshur County.

**Sanders;** post village in Wyoming County.

**Sandfork;** post village in Gilmer County situated on Little Kanawha River.

**Sandhill;** post village in Marshall County.

**Sand Lick;** branch, a small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.

**Sandlick;** branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.

**Sand Lick;** branch, a very small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.

**Sand Lick;** branch, a very small right-hand tributary to Bluestone River in Mercer County.

**Sand Lick;** creek, a right-hand branch of Marsh Fork of Coal River in Raleigh County.

- Sand Lick**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Sandlick**; fork, a left-hand branch of Laurel Creek, a tributary to Coal River, in Boone County.
- Sandlick**; run, a right-hand branch of Right Fork of Simpson Creek in Taylor County.
- Sand Ridge**; hill west of the South Branch of Potomac River in Pendleton County.
- Sandrun**; post village in Upshur County.
- Sandusky**; post village in Tyler County.
- Sandy**; creek, a small left-hand branch of Ohio River in Jackson County.
- Sandy**; creek, a right-hand branch of Valley River formed by two forks, Little and Big Sandy creeks, forming boundary line between Taylor and Barbour and between Barbour and Preston counties.
- Sandy**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Sandy Huff**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Sandy Huff**; post village in McDowell County.
- Sandy Ridge**; short ridge in Pendleton County. Altitude, 2,500 to 3,000 feet.
- Sandy Ridge**; mountains in Hampshire County.
- Sandy Ridge**; short range east of Greenbrier River in Pocahontas County.
- Sandyville**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Sang**; run, a left-hand head fork of Laurel Fork of French Creek in Upshur County.
- Sangamore**; fork, a small right-hand branch of Open Fork of Bell Creek, a tributary to Gauley River, in Clay County.
- Sanoma**; post village in Wirt County.
- Santifee**; post village in Summers County.
- Sapp**; run, a right-hand branch of Booths Creek in Marion County.
- Sarah**; post village in Cabell County.
- Sardis**; post village in Harrison County.
- Sassafras**; post village in Mason County.
- Sattes**; post village in Kanawha County on the Ohio Central Lines.
- Saulsbury**; post village in Wood County.
- Saulsbury**; run, a small left-hand branch of Deer Creek, a tributary to North Fork of Greenbrier River, in Pocahontas County.
- Saulsville**; post village in Wyoming County.
- Saunders**; creek, a very small left-hand tributary to Mud River, a branch of Guy-andot River, in Cabell County.
- Savage**; post village in Mineral County.
- Savanah**; post village in Greenbrier County.
- Saw Mill**; run, a small left-hand tributary to Buckhannon River in Upshur County.
- Sawyer**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.
- Saxon**; post village in Raleigh County.
- Scab**; run, a right-hand branch of Tygarts Valley River in Taylor County.
- Scary**; creek, a very small left-hand tributary to Middle Fork of Mud River in Lincoln County.
- Scary**; creek, a small left-hand tributary to Kanawha River in Putnam County.
- Scary**; post village in Putnam County on the Chesapeake and Ohio Railway. Altitude, 591 feet.
- Scheidler**; run, a right-hand branch of Little Fishing Creek in Wetzel County.
- Scherr**; post village in Grant County.
- Schilling**; post village in Roane County.
- Schoolcraft**; run, a small left-hand tributary to Left Fork of Middle Fork of Tygarts Valley River, in Randolph County.

- Schoolhouse**; branch, a very small right-hand tributary to Pocotaligo River, a branch of Kanawha River, in Kanawha County.
- Schoolhouse**; branch, a small right-hand tributary to Twomile Creek, a branch of Guyandot River, in Lincoln County.
- Schoolhouse**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Schoolhouse**; fork, a small, indirect left-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.
- Schoolhouse**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Schoolhouse**; run, a left-hand tributary to Indian Fork in Gilmer County.
- Schoonover Knob**; summit in Clay County. Altitude, 1,595 feet.
- Schultz**; post village in Pleasants County.
- Scidmore**; run, a very small left-hand tributary to Elk River in Braxton County.
- Scott**; branch, a very small left-hand tributary to Fields Creek, a branch of Kanawha River, in Kanawha County.
- Scott**; branch, a very small left-hand tributary to Glade Creek, a branch of New River, in Raleigh County.
- Scott**; fork, a left-hand fork of Westfall Fork of Cedar Creek in Braxton County.
- Scott**; post village in Wood County on the Chesapeake and Ohio Railway. Altitude, 694 feet.
- Scott**; run, a left-hand branch of Buffalo Creek in Brooke County.
- Scottdale**; post village in Marion County.
- Scott Depot**; post village in Putnam County.
- Scotts**; branch, a small left-hand tributary to Rich Creek, a branch of New River, in Monroe County.
- Scotts**; run, a left-hand branch of Miracle Run in Monongalia County.
- Scrabble**; creek, a small right-hand tributary to Gauley River in Fayette County.
- Scrafford**; post village in Monongalia County.
- Scratchers**; run, a left-hand branch of Prickett Run in Marion County.
- Seaman**; post village in Roane County on the Baltimore and Ohio Railroad.
- Second**; branch, a left-hand branch of Hurricane Creek in Putnam County.
- Second**; creek, a left-hand branch of Greenbrier River in Monroe and Greenbrier counties.
- Second Big**; run, a small right-hand tributary to Oil Creek in Lewis County.
- Secondcreek**; post village in Monroe County.
- Sedalia**; post village in Doddridge County.
- Sedan**; post village in Hampshire County.
- See All**; summit in Pocahontas County.
- Seebert**; post village in Pocahontas County, on the Chesapeake and Ohio Railway.
- See Camp**; gap in hills caused by Schoolcraft Run, a small tributary to Monongahela River, in Randolph County.
- Seemly**; post village in Grant County.
- Selbyville**; post village in Upshur County.
- Sell**; post village in Preston County.
- Senate**; branch, a right-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Clay County.
- Seneca**; creek, a left-hand tributary to North Fork of Potomac River in Pendleton County.
- Seneca**; creek, a right-hand branch of North Fork of Potomac River in Pendleton County.
- Seneca**; town in Monongalia County. Population, 723.
- Seng**; branch, a very small left-hand tributary to Mulberry Fork of Loop Creek, a branch of Kanawha River, in Fayette County.
- Seng**; creek, a very small right-hand tributary to Coal River in Boone County.



- Seng**; fork, a small right-hand tributary to Hopkins Fork of Laurel Creek, a branch of Coal River, in Boone County.
- Seng**; post village in Logan County.
- Seng Camp**; creek, a small right-hand tributary to Spruce Fork of Little Coal River in Logan County.
- Serena**; post village in Clay County.
- Servia**; post village in Braxton County.
- Seth**; post village in Boone County.
- Settle**; post village in Mason County.
- Sevenmile**; creek, a small left-hand tributary to Ohio River in Cabell County.
- Sevenpines**; village in Marion County.
- Sewell**; creek, a small left-hand tributary to Meadow River in Greenbrier County.
- Sewell**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 1,003 feet.
- Seymourville**; post village in Grant County.
- Shabby Room**; branch, a very small right-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Shad**; post village in Roane County.
- Shadrick**; fork, a right-hand branch of Hughes Creek, a tributary to Kanawha River, in Kanawha County.
- Shadyspring**; post village in Raleigh County.
- Shafter**; post village in Pendleton County.
- Shamblings Mills**; post village in Roane County.
- Shanghai**; post village in Berkeley County.
- Shanks**; post village in Hampshire County.
- Shannon**; post village in Ohio County.
- Shannon Mill**; creek, a very small right-hand tributary to Guyandot River in Wyoming County.
- Sharp Knob**; summit in Pocahontas County. Altitude, 4,545 feet.
- Shaver**; fork, a right fork of Westfall Fork of Cedar Creek in Braxton County.
- Shavers**; mountain, a ridge east of Shavers Fork of Cheat River in Randolph County.
- Shavers**; run, a small right-hand tributary to Valley River in Randolph County.
- Shaw**; post village in Mineral County on the West Virginia Central and Pittsburg Railway. Altitude, 1,290 feet.
- Shawnee**; post village in Pleasants County.
- Sheep**; run, a left-hand branch of North Fork of Fishing Creek in Wetzel County.
- Shelby**; run, a left-hand branch of Berkeley Run in Taylor County.
- Shell Camp Ridge**; narrow, broken mountains between Big Clear Creek and Smokehouse Branch, a fork of Big Clear Creek, in Greenbrier County. Altitude, 4,000 feet.
- Shelley**; post village in Clay County.
- Shelton**; post village in Clay County on the Charleston, Clendennin and Sutton Railroad.
- Shenandoah**; mountain, a broken range of mountains originating in Bath County, Virginia, and extending northeasterly through Hardy and Hampshire counties, West Virginia. Altitude, 1,500 to 3,000 feet.
- Shenandoah Junction**; post village in Jefferson County on the Baltimore and Ohio and Norfolk and Western railroads. Altitude, 512 feet.
- Shenango**; creek, a right-hand branch of Fishing Creek in Wetzel County.
- Shepherd Spring**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Raleigh County.
- Shepherdstown**; town in Jefferson County on the Norfolk and Western Railway. Population, 1,184.
- Sheppard**; post village in Mingo County.

- Sheridan**; post village in Lincoln County on the Chesapeake and Ohio Railway.
- Sherman**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Sherrard**; post village in Marshall County.
- Shiloh**; post village in Tyler County.
- Shinnston**; town in Harrison County. Population, 535.
- Shirkey**; branch, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Shirley**; post village in Tyler County.
- Shoal**; branch, a very small right-hand tributary to Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Shoals**; post village in Wayne County, on the Norfolk and Western Railway.
- Shock**; post village in Braxton County.
- Shock**; run, a small left-hand branch of Suttleton Creek, a tributary to Greenbrier River, in Pocahontas County.
- Shockley**; branch, a small left-hand tributary to Millers Camp Branch of Marsh Fork of Coal River in Raleigh County.
- Shock Mill**; fork, a small left-hand tributary to Right Fork of Steer Creek in Braxton County.
- Shooks**; run, a small right-hand tributary to Moorefield River in Hardy County.
- Shoomaker Knob**; summit in Greenbrier County.
- Shop**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Shops**; post village in Putnam County.
- Short**; branch, a small right-hand tributary to Fifteenmile Fork of Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Short**; branch, a small left-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.
- Short**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Short**; creek, a left-hand branch of Ohio River in Ohio County.
- Short**; creek, a very small right-hand branch of Wolf Creek, a tributary to New River, in Fayette County.
- Short**; creek, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Short**; mountain, a summit in Greenbrier County.
- Short**; mountain in Morgan County. Elevation, 1,388 feet.
- Short**; run, a small right-hand tributary to Middle Fork of Tygarts Valley River in Randolph County.
- Short**; run, a very small right-hand tributary to Left Fork of Buckhannon River in Randolph County.
- Short Bend**; creek, a small right-hand branch of Little Hart Creek, a tributary to Guyandot River, in Lincoln County.
- Short Bend**; fork, a small right-hand branch of Fourteenmile Creek, a tributary to Guyandot River, in Lincoln County.
- Shortcreek**; post village in Brooke County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway.
- Short Pole**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Shreeve**; run, a very small left-hand tributary to Little Kanawha River in Braxton County.
- Shrewsbury**; post village in Kanawha County.
- Shriner**; run, a left-hand branch of West Virginia Fork of Dunkard Creek in Monongalia County.
- Shryock**; post village in Greenbrier County.

- Shumate**; branch, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Siberia**; post village in Mercer County.
- Sidney**; post village in Wayne County.
- Sigman**; post village in Putnam County.
- Siloam**; post village in Mason County.
- Silverhill**; post village in Wetzel County.
- Silverton**; post village in Jackson County, on the Baltimore and Ohio Railroad.
- Simmon**; creek, a small left-hand tributary to Bluestone River in Mercer County.
- Simmon**; run, a small left-hand tributary to Right Fork of Buckhannon River in Upshur County.
- Simmons**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Simmons**; creek, a small right-hand tributary to Kanawha River in Kanawha County.
- Simmons**; creek, a small right-hand tributary to Kanawha River in Kanawha County.
- Simmons**; mountain, a short ridge between Dry Run and Hammer Run, left-hand branches of South Branch of the Potomac, in Pendleton County.
- Simoda**; post village in Pendleton County.
- Simon**; branch, a very small right-hand tributary to Middle Fork of Mud River in Lincoln County.
- Simons**; post village in Barbour County.
- Simpson**; post village in Taylor County, on the Baltimore and Ohio Railroad.
- Simpson**; run, a small right-hand branch of Little Sandy Creek in Preston County.
- Sims**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Raleigh County.
- Sincerity**; post village in Wetzel County.
- Sinclair**; post village in Preston County.
- Sinking**; creek, a right-hand branch of Little Kanawha River in Gilmer County.
- Sinking**; creek, a small stream in Greenbrier County, rising in Big Clear Mountain. It flows southward a short distance and sinks.
- Sinks Grove**; post village in Monroe County.
- Sioto**; post village in Lincoln County.
- Sir Johns**; run, a right-hand branch of Potomac River in Morgan County.
- Sir Johns Run**; post village in Morgan County, on the Baltimore and Ohio Railroad.
- Sissonville**; post village in Kanawha County.
- Sistersville**; city in Tyler County. Population, 2,979.
- Sixmile**; creek, a small left-hand branch of Lens Creek, a tributary to Kanawha River, in Kanawha County.
- Sixmile**; creek, a small left-hand tributary to Spruce Fork of Little Coal River in Boone County.
- Sixmile**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Sixmile**; post village in Boone County.
- Skelt**; post village in Webster County.
- Skidmore**; post village in Jackson County.
- Skidmore**; run, a small right-hand branch of Little Kanawha River in Gilmer County.
- Skillet**; creek, a very small right-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.
- Skin**; creek, a right-hand tributary to West Fork of Monongahela River in Lewis County.

- Skin**; fork, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Skin**; fork, a very small right-hand tributary to Guyandot River in Wyoming County.
- Skinner**; fork, a small left-hand tributary to Surveyor Fork, a branch of Marsh Fork of Coal River, in Raleigh County.
- Skin Poplar**; branch, a small right-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Skin Poplar**; gap, a height in Guyandot Mountain in Raleigh County. Altitude, 2,360 feet.
- Skitter**; creek, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Skull Run**; post village in Jackson County.
- Skyle**; creek, a small right-hand tributary to Birch River in Webster County.
- Skyles**; post village in Webster County.
- Slab**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Slab**; fork, a right-hand tributary to Guyandot River in Raleigh and Wyoming counties.
- Slab Camp**; creek, a small left-hand tributary to Greenbrier River in Greenbrier County.
- Slab Camp**; fork, a left-hand branch of French Creek, a tributary to Buckhannon River, in Upshur County.
- Slab Camp**; mountain, a short ridge in Greenbrier County. Altitude, 3,000 to 3,050 feet.
- Slab Camp**; run, a small right-hand tributary to Williams River in Webster County.
- Slab Creek**; run, a small right-hand branch of Cedar Creek in Braxton County.
- Slack**; branch, a small left-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.
- Slanesville**; post village in Hampshire County.
- Slap Camp**; run, a right-hand tributary of Right Fork of Skin Creek in Gilmer County.
- Slash Lick**; creek, a small left-hand tributary to Howards Creek, a branch of Greenbrier River, in Greenbrier County.
- Slate**; post village in Wood County.
- Slate Lick**; small right-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Slate Lick Knob**; summit in Pocahontas County.
- Slater**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Slater**; creek, a very small right-hand tributary to New River in Fayette County.
- Slater**; station in Fayette County on the Chesapeake and Ohio Railway and at junction of Slater Creek and New River. Altitude, 1,108 feet.
- Slaty**; fork, a small right-hand branch of Old Field Fork of Elk River in Pocahontas County.
- Slatyfork**; post village in Pocahontas County.
- Slaty Ridge**; broken mountainous country in Pocahontas County.
- Slaughter**; creek, a small left-hand tributary to Kanawha River in Kanawha County.
- Slaunch**; fork, a left-hand head fork of Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Sleepy**; creek, a small left-hand tributary to Hurricane Creek, a branch of Kanawha River, in Putnam County.
- Sleepy**; creek, a right-hand branch of Potomac River in Morgan County.
- Sleepy Creek**; mountain in Berkeley and Morgan counties. Elevation, 1,800 feet.

- Sleith**; post village in Braxton County.
- Sleps**; branch, a very small right-hand tributary to Elk River in Webster County.
- Slick Rock**; branch, a very small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Wyoming County.
- Slick Rock**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Sliding Hill**; run, a small right-hand branch of Little Kanawha River in Gilmer County.
- Slipcamp**; run, a right-hand branch of Indian Fork Run in Gilmer County.
- Slippery Gut**; branch, a small left-hand tributary to Little Coal River, a branch of Coal River and indirect tributary to Kanawha River, in Boone County.
- Sloan**; post village in Wood County.
- Slowers**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Smith**; branch, a small right-hand branch of Bell Creek, a tributary to Gauley River, in Fayette County.
- Smith**; branch, a very small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.
- Smith**; branch, a very small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Smith**; branch, a very small left-hand tributary to New River in Mercer County.
- Smith**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Smith**; creek, a left-hand tributary to South Branch of Potomac River in Pendleton County.
- Smith**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Smithers**; creek, a small right-hand tributary to Kanawha River in Kanawha and Fayette counties.
- Smithfield**; post village in Wetzel County on the Baltimore and Ohio Railroad.
- Smithton**; post village in Doddridge County on the Baltimore and Ohio Railroad. Altitude, 795 feet.
- Smithville**; post village in Ritchie County.
- Smoke Camp Knob**; summit in Pocahontas County.
- Smoke Hole Settlement**; neighborhood at the base of the South Fork of the Potomac at the east base of North Fork Mountains, in Pendleton and Grant counties.
- Smokehouse**; branch, a small right-hand branch of South Fork of Big Clear Creek, a tributary to Meadow River, in Greenbrier County.
- Smokehouse**; fork, a small right-hand branch of Big Heart Creek, a tributary to Guyandot River, in Logan County.
- Smoot**; post village in Greenbrier County on the Baltimore and Ohio Railroad.
- Snake**; fork, a small right-hand tributary to Elk River in Clay County.
- Snake**; run, a small right-hand tributary to Muddy Creek, a branch of Greenbrier River, in Greenbrier County.
- Snake Root**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Snap**; branch, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Snow**; mount in Pendleton County. Altitude, 4,500 feet.
- Snowden**; post village in Lincoln County.
- Snowhill**; post village in Nicholas County on the Ohio Central Lines.
- Snowy**; creek, a left-hand tributary to Youghiogheny River in Preston County.
- Snyder Knob**; summit in Randolph County.
- Snyders Mills**; village in Jefferson County.

**Soab**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Soak**; creek, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.

**Soak**; post village in Raleigh County.

**South**; fork, a small head tributary to Left Fork of Buckhannon River in Randolph County.

**South**; fork, a right-hand head tributary to Snowy Creek, a branch of Youghiogheny River, in Preston County.

**South Branch**; mountain, a narrow ridge in Hardy and Hampshire counties. Altitude, 1,500 to 3,000 feet.

**Southbranch Depot**; post village in Hampshire County.

**South Elkins**; town in Randolph County. Population, 206.

**South Fork**; mountain, broken range in the eastern part of the State. Altitude, 1,500 to 3,000 feet.

**South Mill**; creek, a right-hand tributary to South Branch of Potomac River in Grant and Pendleton counties.

**South Millcreek**; post village in Pendleton County.

**South Morgantown**; town in Monongalia County. Population, 405.

**Southside**; post village in Mason County.

**Souttell**; run, a left-hand branch of Short Creek in Ohio County.

**Sow**; branch, a very small right-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.

**Spangler**; branch, a very small left-hand tributary to Winding Gulf, a branch of Guyandot River, in Raleigh County.

**Spangler**; fork, a small left-hand branch of Middle Fork of Blue Creek, a tributary to Elk River, in Kanawha County.

**Spangler**; post village in Kanawha County.

**Spanishburg**; post village in Mercer County, located on Bluestone River. Altitude, 2,074 feet.

**Spanker**; branch, a very small right-hand tributary to Marsh Fork of Coal River in Raleigh County.

**Sparrow**; creek, a small left-hand tributary to Spruce Fork of Little Coal River, a branch of Coal River, in Boone County.

**Sparrow**; run, a small left-hand tributary to Holly River in Braxton County.

**Spaulding**; post village in Mingo County.

**Speed**; branch, a very small left-hand tributary to Sycamore Creek, a branch of Clear Fork of Coal River, in Raleigh County.

**Speed**; post village in Roane County.

**Spencer**; branch, a small right-hand tributary to Boyer Fork of Piney Creek, a branch of New River, in Raleigh County.

**Spencer**; county seat of Roane County on the Baltimore and Ohio Railroad. Population, 737.

**Spice**; creek, a very small right-hand tributary to Guyandot River in Mingo County.

**Spice**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Spice**; creek, a small left-hand tributary to South Fork of Tug River in McDowell County.

**Spice**; run, a small left-hand tributary to Greenbrier River on boundary line between Pocahontas and Greenbrier counties.

**Spice**; run, a small right-hand tributary to Williams River in Webster County.

**Spice**; run, a very small right-hand tributary to Gauley River in Nicholas County.

**Spice Laurel**; branch, a small left-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

- Spicelick**; fork, a head fork of Joe Creek, a tributary to Coal River, in Boone County.
- Spider**; creek, a right-hand branch of Pinnacle Creek, a tributary to Guyandot River, in Wyoming County.
- Spider Ridge**; mountains in Wyoming County.
- Spilman**; post village in Mason County on the Baltimore and Ohio Railroad.
- Spottswood**; post village in Logan County.
- Spread Bend**; mountain, a short ridge north of Elk River in Clay County. Altitude, 1,000 feet.
- Spring**; branch, a very small right-hand tributary to Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Spring**; branch, a small right-hand branch of Rock Camp Fork of Twentymile Creek, a tributary to Gauley River, in Nicholas County.
- Spring**; creek, a small right-hand tributary to Greenbrier River in Greenbrier County.
- Spring**; creek, a right-hand branch of Grass Run in Gilmer County.
- Spring**; creek, a small left-hand tributary to Ohio River, rising in Roane County.
- Spring**; fork, a left-hand branch of Ben Creek, a tributary to Tug Fork of Big Sandy River, in Mingo County.
- Spring**; fork, a small left-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Spring Creek**; post village in Greenbrier County on the Chesapeake and Ohio Railway.
- Springdale**; post village in Fayette County.
- Springfield**; town in Hampshire County on the Baltimore and Ohio Railroad. Population, 143.
- Springgap**; post village in Hampshire County.
- Springgarden**; post village in Roane County.
- Springhill**; post village in Kanawha County on the Chesapeake and Ohio, the Kanawha and Coal River, and the Ohio Central Lines railroads. Altitude, 597 feet.
- Sprive**; run, a small right-hand tributary to Left Fork of Steer Creek in Braxton County.
- Spruce**; branch, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Spruce**; fork, a stream in Logan and Boone counties, uniting with Pond Fork to form Little Coal River.
- Spruce**; fork, a small left-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Webster County.
- Spruce**; fork, a small left-hand tributary to Horse Creek, a branch of Little Coal River, in Boone County.
- Spruce**; fork, a left-hand head fork of Little Coal River, a branch of Coal River, in Boone and Logan counties.
- Spruce**; fork, a small right-hand tributary to Right Fork of Stone Coal Creek in Upshur County.
- Spruce**; fork, a small right-hand branch of Brier Creek, a tributary to Coal River, in Kanawha County.
- Spruce**; fork, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Spruce**; fork, a small right-hand tributary to Birch River, a branch of Elk River, in Webster County.
- Spruce**; fork, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Spruce**; fork, a right-hand tributary to Wolf Creek in Braxton County.
- Spruce**; run, a small right-hand tributary to Cedar Creek in Gilmer County.

- Spruce**; run, a right-hand tributary to Cheat River in Preston County.
- Spruce**; run, a small right-hand branch of Brushy Fork of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Spruce**; run, a small right-hand branch of Dry Creek, a tributary to Howards Creek, in Greenbrier County.
- Spruce**; mountain, a short ridge lying west of the North Fork of the Potomac, parallel to the Timber Ridge, in Pendleton County.
- Spruce Knob**; summit in Pocahontas County. Altitude, 4,730 feet.
- Spruce Knob**; summit of Spruce Mountain in Pendleton County. Altitude, 4,860 feet.
- Spruce Low**; gap caused by Spruce Fork of Blue Creek.
- Spruce Pine Hollow**; small right-hand tributary to Kanawha River in Kanawha County.
- Spurlock**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Spurlockville**; post village in Lincoln County.
- Squealer Knob**; summit in Raleigh County.
- Squirejim**; post village in McDowell County.
- Stafford**; branch, a very small right-hand tributary to Guayandot River in Mingo County.
- Stafford**; post village in Mingo County.
- Stags**; run, a small left-hand branch of Patterson Creek, a tributary to North Branch of Potomac River, in Mineral County.
- Stalnaker**; post village in Lewis County.
- Stamping**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Stanaford**; branch, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Stanley**; fork, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Boone County.
- Stanley**; post village in Ritchie County.
- Starkey**; run, a left-hand tributary of Buffalo Creek in Marion County.
- State**; fork, a right-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Staten**; post village in Calhoun County.
- Staten**; run, a very small right-hand tributary to Kanawha River in Kanawha County.
- State Road**; run, a left-hand branch of Paw Paw Creek in Marion County.
- Statler Run**; post village in Monongalia County.
- Statts Mills**; post village in Jackson County.
- Steel**; post village in Wood County.
- Steel**; run, a right-hand branch of Little Fishing Run in Wetzel County.
- Steel Trap**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Steener**; fork, a left-hand tributary of Lynn Camp Run in Wetzel County.
- Steep**; run, a small right-hand tributary to Wolf Creek in Braxton County.
- Steep Gut**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Steer**; creek, a small left-hand tributary to Ohio River in Calhoun County.
- Steer**; run, a right-hand branch of Left Fork of Steer Creek in Gilmer County.
- Stevens**; branch, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Stevens**; post village in Mason County on the Baltimore and Ohio Railroad.
- Stewart**; creek, a small left-hand tributary to Little Bluestone Creek in Summers County.



- Stewart**; creek, a right-hand branch of Little Kanawha River in Gilmer County.
- Stewart**; run, a small right-hand tributary to Valley River in Randolph County.
- Stewartstown**; post village in Monongalia County.
- Still**; run, a small right-hand tributary to Guyandot River in Wyoming County.
- Stillhouse**; branch, a small right-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Stillhouse**; branch, a very small right-hand tributary to Peters Creek, a branch of Gauley River, in Nicholas County.
- Still House**; branch, a small left-hand tributary to Leatherwood Fork of Elk River in Webster County.
- Stillhouse**; run, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.
- Stillman**; post village in Upshur County.
- Stillwell**; post village in Wood County.
- Stinking Lick**; creek, a very small right-hand tributary to New River in Summers and Monroe counties.
- Stinson**; branch, a small left-hand tributary to Left Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Stinson**; post village in Calhoun County.
- Stitt**; branch, a very small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.
- Stockerts**; post village in Upshur County.
- Stockton**; post village in Mason County.
- Stockton**; station in Fayette County on the Kanawha and Michigan Railway and on Kanawha River. Altitude, 618 feet.
- Stockton Knob**; summit in Fayette County. Altitude, 3,252 feet.
- Stolling**; fork, a small left-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- Stone**; fork, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Stone**; run, a small right-hand tributary to Valley River in Barbour County.
- Stonecliff**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 1,076 feet.
- Stone Coal**; branch, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Stonecoal**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Stone Coal**; branch, a small right-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Stone Coal**; creek, a right-hand branch of Tommy Creek, a head fork of Guyandot River, in Raleigh County.
- Stonecoal**; post village in Wayne County.
- Stone Coal**; run, a small right-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Stonewall**; post village in Raleigh County on the Chesapeake and Ohio Railway.
- Stony**; creek, a small left-hand tributary to Elk River in Braxton County.
- Stony**; creek, a small left-hand tributary to Greenbrier River in Summers County.
- Stony**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Stony**; post village in Hampshire County.
- Stony**; river, a large right-hand tributary to North Branch of Potomac River in Grant County.
- Stony**; run, a small left-hand tributary to Elk Water in Randolph County.
- Stony**; run, a small left-hand branch of Suttleton Creek, a tributary to Greenbrier River, in Pocahontas County.

**Stony**; run, a small right-hand tributary to South Fork of Potomac River in Pendleton County.

**Stony Creek**; mountain, a short ridge north of Greenbrier River, in Pocahontas County. Altitude, 2,500 to 3,500 feet.

**Stony Ridge**; mountains in Mercer County.

**Stotlers Crossroads**; post village in Morgan County.

**Stout**; creek; a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.

**Stouts Mills**; post village in Gilmer County situated on Little Kanawha River.

**Stover**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.

**Stover**; fork, a small left-hand tributary to Clear Fork of Coal River in Raleigh County.

**Stover**; fork, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.

**Stover**; fork, a very small right-hand tributary to Sycamore Creek, a branch of Clear Fork of Coal River, in Raleigh County.

**Stover**; post village in Tucker County on the Dry Fork Railroad.

**Straight**; creek, a small left-hand tributary to Gauley River in Webster County.

**Straight**; fork, a head fork of Little Skin Creek in Lewis County.

**Straight**; fork; a small left-hand tributary to West Fork of Monongahela River in Lewis County.

**Straight**; fork, a very small left-hand tributary to Huff Creek, a branch of Guyandot River, in Wyoming County.

**Straight**; fork, a left-hand tributary to Middle Fork of Mud River, a branch of Guyandot River, in Lincoln County.

**Straight Creek**; mountain, a short ridge north of Williams River in Webster County.

**Strange**; creek, a small left-hand tributary to Elk River in Nicholas and Braxton counties.

**Strangecreek**; post village in Braxton County.

**Streeter**; post village in Summers County.

**Stroud**; creek, a small right-hand tributary to Gauley River, in Nicholas and Webster counties.

**Stroud Knobs**; summit in Nicholas County.

**Strouds**; post village in Webster County.

**Stump**; run, a small right-hand tributary to South Fork of Potomac River in Hardy County.

**Stumptown**; post village in Gilmer County.

**Stumpy**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Sturms Mill**; village in Marion County.

**Styles**; run, a left-hand branch of Long Drain in Wetzel County.

**Suck**; creek, a small right-hand branch of Little Bluestone Creek, a tributary to Bluestone River, in Summers County.

**Sue**; post village in Greenbrier County.

**Sugar**; branch, a very small left-hand tributary to Hominy Creek, a branch of Gauley River, in Nicholas County.

**Sugar**; creek, a right fork of Laurel Creek, a tributary to Valley River, in Barbour County.

**Sugar**; creek, a right-hand branch of Back Fork of Elk River in Webster and Randolph counties.

**Sugar**; creek, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan and Wyoming counties.

- Sugar**; creek, a small left-hand branch of Twomile Creek, a tributary to Kanawha River, in Kanawha County.
- Sugar**; creek, a very small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.
- Sugar**; creek, a small left-hand tributary to Williams River in Pocahontas County.
- Sugar**; run, a left-hand branch of Fish Creek in Wetzel County.
- Sugar**; run, a very small right-hand tributary to Guyandot River in Wyoming County.
- Sugar**; run, a left-hand branch of Paw Paw Creek in Marion County.
- Sugar**; run, a small right-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Sugar**; ran, a left-hand branch of West Virginia Fork of Dunkard Creek in Monongalia County.
- Sugar Camp**; branch, a very small left-hand tributary to Mulberry Fork of Loop Creek, a branch of Kanawha River, in Fayette County.
- Sugar Camp**; branch, a small left-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.
- Sugar Camp**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Sugar Camp**; branch, a very small right-hand branch of Hughes Creek, a tributary to Kanawha River, in Kanawha County.
- Sugar Camp**; branch, a very small right-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Sugarcamp**; branch, a very small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.
- Sugar Camp**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Sugarcamp**; creek, a very small right-hand branch of Davis Creek, a tributary to Kanawha River, in Kanawha County.
- Sugarcamp**; post village in Doddridge County.
- Sugar Camp**; run, a small right-hand tributary to Elk River in Braxton County.
- Sugar Camp**; run, a left-hand tributary of Booths Creek in Harrison County.
- Sugar Camp**; run, a small left-hand tributary to Knapp Creek, a branch of Greenbrier River, in Pocahontas County.
- Sugar Camp Knob**; summit in Greenbrier County.
- Sugarcamp Knob**; summit in Lincoln County.
- Sugar Creek**; mountain, a short ridge between Williams River and Williams River Mountain in Pocahontas County.
- Sugargrove**; post village in Pendleton County.
- Sugar Grove Knob**; summit in Nicholas County. Altitude, 3,028 feet.
- Sugar Knob**; summit in Braxton County. Altitude, 1,630 feet.
- Sugar Knob**; summit in Greenbrier County.
- Sugar Run**; branch, a small left-hand tributary to Rich Creek, a branch of New River, in Monroe County.
- Sugartree**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Boone County.
- Sugar Tree**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Sugar Tree**; branch, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Sugartree**; fork, a left-hand tributary to Middle Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Sugar Tree Bench**; mountains, a short spur of Yew Mountains in Greenbrier and Pocahontas counties.

**Sugar Valley**; post village in Pleasants County.

**Suke**; creek, a small left-hand branch of Little Huff Creek, a tributary to Guyandot River, in Wyoming County.

**Sulphur**; post village in Mineral County.

**Sulphur**; run, a small right-hand branch of Hughes Fork, in Braxton County.

**Sulphur Spring**; fork, a small right-hand branch of Fourteenmile Creek, a tributary to Guyandot River, in Lincoln County.

**Sulphur Spring**; fork, a small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.

**Sulphur Spring**; fork, a small left-hand branch of Peters Cave Fork of Horse Creek, a tributary to Little Coal River, in Lincoln County.

**Summers**; county, situated in the southern part of the State on the summit of the Allegheny Plateau, which here presents the broken, mountainous surface with numerous high points, the highest 3,945 feet, Keeney Knob. Area, 368 square miles. Population, 16,265—white, 15,149; negro, 1,115; foreign born, 64. County seat, Hinton. The mean magnetic declination in 1900 was 1° 30'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Chesapeake and Ohio Railway.

**Summers**; post village in Doddridge County.

**Summersville**; county seat of Nicholas County. Population, 223.

**Summersville**; mountain in Nicholas County. Altitude, 2,584 feet.

**Summit Point**; post village in Jefferson County on the Baltimore and Ohio Railroad. Altitude, 623 feet.

**Sunhill**; post village in Wyoming County.

**Sunlight**; post village in Greenbrier County.

**Sunnyside**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 842 feet.

**Sunrise**; branch, a small right-hand branch of Trace Creek, a tributary to Middle Fork of Mud River, in Lincoln County.

**Sunset**; branch, a small left-hand tributary to Trace Creek, a branch of Middle Fork of Mud River, in Lincoln County.

**Sunset**; post village in Pocahontas County.

**Surveyor**; fork, a left-hand head fork of Marsh Fork of Coal River, in Raleigh County.

**Sutherland**; post village in Kanawha County.

**Sutphin**; branch, a very small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.

**Suttleton**; creek, a small left-hand tributary to Greenbrier River in Pocahontas County.

**Sutton**; county seat of Braxton County on the Baltimore and Ohio Railroad. Population, 864. Altitude, 823 feet.

**Sutton**; run, a small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.

**Sutton**; run, a small right-hand tributary to Birch River in Nicholas County.

**Swago**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.

**Swago**; mountain, a short ridge in central part of Pocahontas County. Altitude, 3,500 to 4,000 feet.

**Swamp**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Swamp**; run, a small right-hand tributary to Valley River in Barbour County.

**Swamprun**; post village in Upshur County.

**Swann**; post village in Cabell County.

- Sweedlin Hill**; short ridge lying east of South Fork of the Potomac in Pendleton County.
- Sweep**; run, a left-hand branch of Booths Creek in Harrison and Morgan counties.
- Sweetland**; post village in Lincoln County.
- Sweetsprings**; post village in Monroe County.
- Sweet Water**; branch, a very small right-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Swell Knob**; summit in Fayette County.
- Swift**; run, a small right-hand tributary to Greenbrier River, in Summers County.
- Swoopes Knobs**; group of summits in Monroe County.
- Sycamore**; branch, a small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Wyoming County.
- Sycamore**; branch, a small right-hand tributary to Big Cub Creek, a branch of Guyandot River, in Wyoming County.
- Sycamore**; branch, a very small right-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Sycamore**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha and Fayette counties.
- Sycamore**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Sycamore**; creek, a small right-hand branch of Little Kanawha River in Gilmer County.
- Sycamore**; creek, a small left-hand branch of Clear Fork of Coal River in Raleigh County.
- Sycamore**; creek, a right-hand branch of Trace Fork in Putnam County.
- Sycamore**; fork, a small right-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Sycamore**; fork, a small right-hand tributary to Left Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Sycamore**; fork, a left-hand tributary to Middle Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Sycamore**; post village in Calhoun County.
- Sycamore Dale**; village in Harrison County.
- Sylvia**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.
- Tabler**; post village in Berkeley County on the Cumberland Valley Railroad.
- Tablerock**; post village in Raleigh County.
- Table Rock**; summit in Kanawha County. Altitude, 1,756 feet.
- Tackett**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Kanawha County.
- Tackey**; fork, a small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.
- Tacy**; post village in Barbour County.
- Tague**; fork, a small right-hand tributary to Right Fork of Steer Creek in Braxton County.
- Takein**; creek, a very small right-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Talcott**; post village in Summers County on the Chesapeake and Ohio Railway. Altitude, 1,512 feet.
- Tallmansville**; post village in Upshur County.
- Tallow Knob**; summit in Pocahontas County.
- Tallyho**; post village in Wood County.
- Tank**; branch, a very small right-hand tributary to Piney Creek, a branch of New River, in Raleigh County.

**Tanner**; fork, a right-hand branch of Little Kanawha River in Gilmer County.

**Tanner**; fork, a small left-hand tributary to Right Fork of Steer Creek in Gilmer County.

**Tanner**; post village in Gilmer County.

**Tantrough**; branch, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.

**Tantrough**; run, a right-hand branch of Fish Creek in Wetzel County.

**Tappan**; post village in Taylor County.

**Tarcoat**; creek, a left-hand tributary to North River in Hampshire County.

**Tariff**; post village in Roane County.

**Tate**; creek, a small right-hand branch of Elk River in Braxton County.

**Tate**; post village in Braxton County.

**Tate**; run, a small right-hand branch of Peters Creek, a tributary to Gauley River, in Nicholas County.

**Tater Knob**; run, a small right-hand tributary to Back Fork of Holly River in Webster County.

**Taylor**; branch, a small left-hand tributary to Gauley River in Nicholas County.

**Taylor**; county, situated on the Allegheny Plateau. Drained by tributaries to the Monongahela River. Area, 132 square miles. Population, 14,978—white, 14,553; negro, 423; foreign born, 384. County seat, Grafton. The mean magnetic declination in 1900 was 4° 5'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 45 to 50°. The county is traversed by the Baltimore and Ohio Railroad.

**Taylor**; fork, a left-hand tributary to Buffalo Creek, a branch of Elk River, in Nicholas and Clay counties.

**Taylor**; fork, a left-hand branch of Jenkins Fork of Loop Creek, a tributary to Kanawha River, in Fayette County.

**Taylor**; run, a very small right-hand tributary to Elk River in Braxton County.

**Tea**; branch, a small right-hand tributary to South Fork of Tug River in McDowell County.

**Tea**; creek, a small right-hand tributary to Williams River in Pocahontas County.

**Tea Creek**; mountain, a short ridge at foot of Gauley Mountain in Pocahontas County. Altitude, 3,500 to 4,000 feet.

**Tearcoat Hill**; town between North Fork of Lunice Creek and Brushy Run in Grant County.

**Teays**; post village in Putnam County.

**Teddy**; post village in Clay County.

**Teeny Knob**; summit in Braxton County.

**Ten Mile**; creek, a small right-hand tributary to Buckhannon River in Upshur County.

**Tenmile**; creek, a small left-hand branch of Guyandot River, a tributary to Ohio River, in Lincoln County.

**Tenmile**; fork, a small left-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.

**Tenmile**; fork, a left-hand branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.

**Tenmile**; fork, a left-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.

**Tenmile**; post village in Upshur County on the Baltimore and Ohio Railroad. Altitude, 1,608 feet.

**Terra Alta**; town in Preston County on the Baltimore and Ohio Railroad. Population, 616.

**Tesla**; post village in Braxton County.

**Teter**; creek, a right-hand tributary to Valley River in Barbour County.

**Texas**; post village in Tucker County on the Baltimore and Ohio Railroad. Altitude, 883 feet.

**Texel**; post village in Randolph County.

**Thacker**; creek, a small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Thacker**; post village in Mingo County on the Norfolk and Western Railway.

**Thayer**; post village in Fayette County.

**The**; creek, a small left-hand tributary to Back Fork of Elk River in Randolph County.

**The Big Bend**; a portion of Greenbrier River, forming a big bend, in Summers County.

**The Loop**; a bend in Meadow River, a branch of Gauley River.

**The Pond**; summit in Raleigh County.

**The Roughs**; hills in Mingo County.

**The Sinks**; valley at the head of Gandy Creek in Randolph County.

**Third**; run, a small right-hand branch of Little Kanawha River in Gilmer County.

**Thoburn**; village in Marion County.

**Thomas**; creek, a small left-hand tributary to Greenbrier River in Pocahontas County.

**Thomas**; mountain, a short ridge between Laurel and Moore runs. branches of Greenbrier River, in Pocahontas County.

**Thomas**; town in Tucker County, on the West Virginia Central and Pittsburg Railway. Population, 2,126.

**Thompson**; post village in Marshall County on the Baltimore and Ohio Railroad.

**Thompson**; run, a small right-hand tributary to Valley River in Randolph County.

**Thorn**; post village in Pendleton County.

**Thorn**; run, a small left-hand tributary to Patterson Creek, a branch of North Branch of Potomac River, in Grant County.

**Thorn**; run, a right-hand tributary to South Branch of Potomac River in Pendleton County.

**Thornton**; post village in Taylor County on the Baltimore and Ohio Railroad. Altitude, 1,038 feet.

**Thorny**; creek, a small left-hand tributary to Greenbrier River in Pocahontas County.

**Thorny Bottom**; right-hand tributary to Cacapon River in Hardy County.

**Thorny Creek**; mountain, a short ridge between Thorny Creek and Greenbrier River in Pocahontas County. Altitude, 3,000 feet.

**Thorny Flat**; summit of Back Alleghany Mountains in Pocahontas County.

**Thoroughfare**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.

**Three Churches**; post village in Hampshire County.

**Three Fork**; creek, a right-hand tributary to Valley River in Taylor County.

**Three Forks**; run, a small left-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.

**Three Forks**; very small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.

**Three Lick**; small right-hand branch of Oil Creek in Lewis County.

**Three Lick**; small right-hand branch of Little Skin Creek in Lewis County.

**Three Lick**; run, a right-hand branch of Oil Creek in Gilmer County.

**Threemile**; creek, a left-hand branch of Ohio River in Cabell County.

**Threemile**; fork, a small right-hand tributary to Whiteoak Creek, a branch of Coal River, in Boone County.

**Threemile**; fork, a very small left-hand branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.

- Three Springs**; branch, a small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Third Heel**; mountain in Berkeley County. Elevation, 1,777 feet.
- Thurmond**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 1,056 feet.
- Tichenal**; post village in Harrison county.
- Tigarts Valley**; river, a right-hand branch of the Monongahela, joining it at Fairmont.
- Tilhance**; creek, a right-hand tributary of Potomac River in Berkeley County.
- Timber Ridge**; mountains lying parallel with Spruce Mountains, west of the North Fork of the Potomac, in Pendleton County. Altitude, 2,000 to 4,000 feet.
- Timothy**; run, a small right-hand branch of Clover Lick Fork in Lewis County.
- Tincture**; fork, a left-hand tributary of Middle Fork of Mud River in Lincoln County.
- Tiney**; creek, a small left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.
- Tipton**; post village in Nicholas county.
- Tobacco**; run, a small left-hand tributary to Little Kanawha River in Lewis County.
- Todd**; run, a right-hand branch of Middle Wheeling Run in Ohio County.
- Tollgate**; post village in Ritchie County on the Baltimore and Ohio Railroad.
- Tom**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha and Fayette counties.
- Tom**; branch, a very small right-hand tributary to Coal River in Raleigh County.
- Tom**; branch, a very small right-hand tributary to North Fork of Elkhorn Creek in McDowell County.
- Tom**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Tom**; creek, a very small left-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Tom**; creek, a small right-hand tributary to Meadow River, a branch of Gauley River, in Greenbrier County.
- Tom**; fork, a small left-hand tributary to Coal River, a branch of Kanawha River, in Lincoln County.
- Tom**; run, a small left-hand branch of Cedar Creek in Braxton County.
- Tom**; run, a very small left-hand tributary to New River in Summers County.
- Tom**; run, a small right-hand tributary to Sand Fork in Lewis County.
- Tomahawk**; village in Berkeley County.
- Tomahawk**; run, a left-hand branch of Indian Fork in Lewis County.
- Tom Bailey**; branch, a small right-hand tributary to Glen Fork, a branch of Laurel Branch of Clear Fork of Guyandot River, in Wyoming County.
- Tommy**; creek, a left-hand head fork of Guyandot River in Raleigh County.
- Tommy Ridge**; mountains in Raleigh County.
- Toney**; creek, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Toney**; fork, a small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Toney**; fork, a right-hand branch of Clear Fork of Guyandot River in Wyoming County.
- Toney**; fork, a small right-hand branch of Buffalo Creek, a tributary to Guyandot River, in Logan County.
- Toney**; fork, a small right-hand branch of Big Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Tony**; branch, a small left-hand tributary to Right Fork of Lower Creek, a branch of Mud River, in Cabell County.



- Tony**; branch, a very small left-hand tributary to Big Ugly Creek, a branch of Guyandot River, in Lincoln County.
- Tooley**; post village in Wayne County.
- Tophet**; post village in Summers County.
- Topins Grove**; post village in Jackson County.
- Top of Alleghany**; post village in Pocahontas County.
- Tornado**; post village in Kanawha County. Altitude, 608 feet.
- Town**; branch, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Town**; creek, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Town**; mountain, a summit in Pendleton County near Franklin.
- Town Creek Knob**; summit of Paint Mountain on boundary line between Raleigh and Fayette counties. Altitude, 3,088 feet.
- Trace**; branch, a very small left-hand tributary to Horse Creek, a branch of Little Coal River, in Lincoln County.
- Trace**; branch, a left-hand head fork of Elk Creek, a tributary to Guyandot River, in Logan County.
- Trace**; branch, a small right-hand tributary of Slab Fork, a branch of Guyandot River, in Wyoming County.
- Trace**; branch, a very small right-hand tributary to South Fork of Elkhorn Creek in McDowell County.
- Trace**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Trace**; creek, a small left-hand tributary to Middle Fork of Mud River in Lincoln County.
- Trace**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Trace**; fork, a head fork of Strange Creek in Nicholas County.
- Trace**; fork, a small left-hand branch of Big Hart Creek, a tributary to Guyandot River, in Logan County.
- Trace**; fork, a small left-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Trace**; fork, a small left-hand branch of Hurricane Creek, a tributary to Kanawha River, in Putnam County.
- Trace**; fork, a small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.
- Trace**; fork, a small left-hand branch of Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Trace**; fork, an indirect left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Trace**; fork, a left-hand branch of Davis Creek, a tributary to Kanawha River, in Kanawha County.
- Trace**; fork, a right-hand branch of Pigeon Creek, a tributary to Tug Fork of Big Sandy River, in Logan County.
- Trace**; fork, a right-hand branch of Tanner Fork, and tributary to Little Kanawha River, in Gilmer County.
- Trace**; fork, a small right-hand branch of Joe Creek, a tributary to Coal River, in Boone County.
- Trace**; fork, a large right-hand branch of Mud River in Lincoln and Putnam counties.
- Trace**; run, a small left-hand tributary to Little Kanawha River in Lewis and Upshur counties.
- Trace**; run, a small left-hand branch of Cedar Creek in Braxton County.

**Trace Fork**; branch, a small left-hand branch of Sandlick Fork of Laurel Creek, a tributary to Coal River, in Boone County.

**Tract Hill**; short ridge in the central part of Pendleton County. Altitude, 2,000 to 2,500 feet.

**Trail**; fork, a right-hand branch of Long Drain River in Wetzel County.

**Travellers Repose**; post village in Pocahontas County.

**Tressel**; post village in Pendleton County.

**Triadelphia**; town in Ohio County on the Baltimore and Ohio Railroad. Altitude, 735 feet. Population, 287.

**Tribble**; post village in Mason County.

**Trilby**; post village in Ritchie County.

**Triplets**; run, a right-hand branch of Little Kanawha River in Braxton County.

**Triplett**; fork, a right-hand branch of O'Brien Fork in Braxton County.

**Triplett**; post village in Roane County.

**Tristan**; post village in Roane County.

**Triune**; post village in Monongalia County.

**Trough**; creek, a right-hand branch of Kiah Fork of Twelvepole Creek in Wayne County.

**Trough**; fork, a small right-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.

**Trough**; fork, a small left-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.

**Trout**; post village in Greenbrier County.

**Trout**; run, a small left-hand tributary to Left Fork of Right Fork of Buckhannon River in Randolph County.

**Trout**; run, a small right-hand tributary to South Branch of Potomac River in Pendleton and Hampshire counties.

**Trout**; run, a right-hand tributary to Cacapon River in Hardy County.

**Trout**; run, a small right-hand tributary to Left Fork of Right Fork of Buckhannon River in Randolph County.

**Troy**; town in Gilmer County. Population, 148.

**Trubie**; run, a small right-hand tributary to Buckhannon River in Upshur County.

**True**; post village in Summers County.

**Truebada**; post village in Gilmer County, situated on Little Kanawha River.

**Tuckahoe**; post village in Greenbrier County on the Chesapeake and Ohio Railway and on Dry Creek. Altitude, 2,035 feet.

**Tucker**; county, situated in the northern part of the State on the Allegheny Plateau. The average elevation is not far from 3,000 feet. Area, 440 square miles. Population, 13,433—white, 13,077; negro, 353; foreign born, 1,508. County seat, Parsons. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 50 inches, and the mean annual temperature 45° to 50°. The county is traversed by the West Virginia Central and Pittsburg Railway.

**Tucker**; post village in Wirt County.

**Tucker**; run, a right-hand branch of Lost Creek in Taylor County.

**Tuckers**; run, a small right-hand tributary to South Branch of Potomac River in Hardy County.

**Tudell**; post village in Wayne County.

**Tug**; fork, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.

**Tug Fork of Big Sandy**; fork, large branch of Big Sandy River, heading in McDowell County; it flows northwest, forming a portion of the western boundary of the State and joining Levisa Fork at Louisa.

**Tugg**; creek, a very small right-hand tributary to New River in Summers County.

- Tug River**; post village in McDowell County, located on Tug Fork of Big Sandy River.
- Tunnelton**; town in Preston County on the Baltimore and Ohio and the West Virginia Northern railroads. Altitude, 1,820 feet. Population, 479.
- Turkey**; branch, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Turkey**; branch, a very small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Turkey**; creek, a very small right-hand tributary to Guyandot River in Wyoming County.
- Turkey**; creek, a very small right-hand branch of Tug Fork of Big Sandy River in Mingo County.
- Turkey**; creek, a very small right-hand tributary to New River in Fayette County.
- Turkey**; creek, a small left-hand tributary to Trace Fork of Mud River, a branch of Guyandot River, in Putnam and Lincoln counties.
- Turkey**; creek, a small left-hand branch of Indian Creek, a tributary to New River, in Monroe County.
- Turkey**; creek, a small left-hand tributary to Gauley River in Webster County.
- Turkey**; fork, a left-hand tributary to Buffalo Creek, a branch of Elk River, in Nicholas County.
- Turkey**; mountain, a short ridge north of Williams River in Webster County. Altitude, 3,500 to 3,887 feet, the latter being the height of one of its peaks.
- Turkey**; post village in Mingo County.
- Turkey**; run, a small right-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Upshur County.
- Turkey**; run, a right-hand branch of Plummer Run in Taylor County.
- Turkey Bone**; mountain, a short ridge in the western part of Randolph County. Altitude, 3,000 to 3,500 feet.
- Turkey Camp Knob**; summit in Wayne County.
- Turkey Gap**; branch, a very small right-hand tributary to South Fork of Elkhorn Creek in McDowell County.
- Turkey Knob**; branch, a very small right-hand tributary to Dunlop Creek, a branch of New River, in Fayette County.
- Turkeylick**; run, a right-hand branch of Tanner Creek in Gilmer County.
- Turkey Ridge**; mountains in Wyoming County.
- Turkey Ridge**; short spur between Taylor Ridge and Turkey Creek in Nicholas County.
- Turkey Wallow**; branch, a very small left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Turley**; branch, a small right-hand tributary to Dunlop Creek, a branch of New River, in Fayette County.
- Turnhole**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Turnrow**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Turtle**; creek, a left-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Turtlecreek**; post village in Boone County.
- Twelve Mile**; creek, a small left-hand tributary to East River, a branch of New River, in Mercer County.
- Twelvepole**; creek, a left-hand branch of Ohio River, formed by two forks, east and west, which rise in Wayne County.
- Twelvepole**; creek, a left-hand tributary to Ohio River in Wayne County.

**Twentymile;** creek, a right-hand tributary to Gauley River, a large branch of Kanawha River, in Nicholas County.

**Twiggs;** post village in Pleasants County.

**Twilight;** village in Ohio County.

**Twin;** branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Twin;** branches, small right-hand tributaries to Cranberry River, in Webster County.

**Twin Sugars;** summit in Greenbrier County.

**Twisted Gun Gap;** height in Mingo County. Altitude, 1,422 feet.

**Twistville;** post village in Braxton County.

**Two;** run, a small right-hand tributary to Crooked Fork of Steer Creek in Gilmer County.

**Two and Three Quarters Mile;** creek, a small left-hand tributary to Kanawha River in Kanawha County.

**Two Lick;** small right-hand tributary to Oil Creek in Lewis County.

**Two Lick;** run, a right-hand tributary to Little Birch River in Braxton County.

**Twomile;** branch, a small left-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.

**Twomile;** branch, a very small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.

**Twomile;** branch, a very small right-hand tributary to Glade Creek, a branch of New River, in Raleigh County.

**Twomile;** creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.

**Twomile;** creek, a small right-hand tributary to Kanawha River in Kanawha County.

**Twomile;** creek, a very small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Twomile;** fork, a small left-hand branch of Whiteoak Creek, a tributary to Coal River, in Boone County.

**Tygart;** creek, a small left-hand tributary to Ohio River in Wood County.

**Tygart;** post village in Randolph County on the Baltimore and Ohio Railroad.

**Tygart's Valley;** large branch of Monongahela River, heading in Randolph County. Its course is generally north through Barbour and Taylor counties to its mouth at Fairmont in Marion County.

**Tyler;** county, situated in the northwestern part of the State, bordering on Ohio River; situated at the foot of the slope of the Allegheny Plateau. Area, 269 square miles. Population, 18,252—white, 18,153; negro, 94; foreign born, 295. County seat, Middlebourne. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Ohio River Railroad.

**Tyler;** creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Tyler;** creek, a small right-hand tributary to Kanawha River in Kanawha County.

**Tyner;** post village in Wood County.

**Tyrconnell Mines;** post village in Taylor County.

**Tyrone;** post village in Monongalia County.

**Uffington;** post village in Monongalia County on the Baltimore and Ohio Railroad.

**Ugly;** branch, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.

**Uler;** post village in Roane County.

**Ungers Store,** post village in Morgan County.

**Union;** county seat of Monroe County. Population, 256.

- Union Mills**; post village in Pleasants County.
- Unionridge**; post village in Cabell County.
- Uniontown**; post village in Wetzel County.
- Unknown**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Uno**; post village in Wyoming County.
- Unus**; post village in Greenbrier County.
- Upland**; post village in Mason County.
- Upper**; gap, height of Huff Mountain in Wyoming County.
- Upper**; creek, a very small right-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Upper**; mountain, a summit between two forks of Moore Run, a left-hand branch of Greenbrier River, in Pocahontas County.
- Upper**; run, a right-hand branch of South Fork of Fishing Creek in Wetzel County.
- Upper Bee Tree**; run, a small left-hand tributary to Back Fork of Elk River in Randolph County.
- Upper Belcher**; branch, a small left-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Upper Birch**; run, a very small left-hand tributary to Elk River in Clay County.
- Upper Cove**; headwaters of Lost River in Hardy County.
- Upperglade**; post village in Webster County.
- Upper Hensley**; creek, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell River.
- Upper Level**; run, a left-hand branch of Cedar Creek in Gilmer County.
- Upper Lick**; small left-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Upper Mill**; creek, a small left-hand tributary to Elk River in Braxton County.
- Upper Pond Lick**; small left-hand tributary to Shavers Fork of Cheat River in Randolph County.
- Upper Road**; branch, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Upper Shannon**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Upper Shant**; run, a small right-hand tributary to Back Fork of Elk River in Randolph County.
- Upper Shaver**; run, a small left-hand tributary to Left Fork of Steer Creek in Braxton County.
- Upper Sleith**; fork, a small left-hand tributary to Right Fork of Steer Creek in Braxton County.
- Upper Sturgeon**; branch, a head fork of Big Cub Creek, a tributary to Guyandot River, in Wyoming County.
- Upper Threemile**; fork, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Upper Tony Camp**; run, a small right-hand tributary to Dry Fork of Cheat River in Randolph County.
- Uppertract**; post village in Pendleton County.
- Upper Two**; run, a small left-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Upshur**; county situated in the central part of the State. It is drained northward by Buckhannon River. Area, 326 square miles. Population, 14,696—white, 14,473; negro, 221; foreign born, 106. County seat, Buckhannon. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 50 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Baltimore and Ohio Railroad.

- Upton**; branch, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Upton**; creek, a very small left-hand tributary to Kanawha River in Kanawha County.
- Upton**; village in Marion County.
- Utica**; post village in Jackson County.
- Uvilla**; post village in Jefferson County.
- Vadis**; post village in Lewis County.
- Vall**; creek, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy Creek, in McDowell County.
- Valley**; fork, a left-hand branch of Middle Fork of Mud River, a tributary to Guyandot River, in Lincoln County.
- Valley**; fork, a right-hand branch of Elk River in Randolph County.
- Valley**; mount, a summit in Pocahontas County. Altitude, 3,500 feet.
- Valley**; river, a tributary to Monongahela River.
- Valleybend**; post village in Randolph County on the West Virginia Central and Pittsburgh Railway.
- Valleydale**; post village in Greenbrier County.
- Valleyfalls**; post village in Marion County, on the Baltimore and Ohio Railroad. Altitude, 969 feet.
- Valleyfork**; post village in Clay County.
- Valley Furnace**; post village in Barbour County.
- Valley Grove**; branch, a small right-hand branch of Elk Twomile Creek, a tributary to Elk River, in Kanawha County.
- Valleygrove**; post village in Ohio County on the Baltimore and Ohio Railroad.
- Valleyhead**; post village in Randolph County.
- Valley Mills**; post village in Wood County.
- Valleypoint**; post village in Preston County.
- Van**; post village in Boone County.
- Vancamp**; post village in Wetzel County.
- Van Clevesville**; post village in Berkeley County on the Baltimore and Ohio Railroad. Altitude, 500 feet.
- Vandalia**; post village in Lewis County.
- Vandegrift**; post village in Randolph County.
- Vanetta**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Vannoys Mill**; post village in Barbour County.
- Vanvoorhis**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Varney**; post village in Mingo County.
- Vaughan**; post village in Nicholas County on the Chesapeake and Ohio Railway.
- Vegan**; post village in Upshur County.
- Venable**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Venison**; fork, a right-hand branch of Perkins Fork in Braxton County.
- Venus**; post village in Gilmer County.
- Veranda**; post village in Mason County.
- Victor**; post village in Fayette County.
- Victoria**; post village in Preston County.
- Vienna**; post village in Wood County on the Baltimore and Ohio Railroad.
- View**; village in Greenbrier County.
- Vilas**; post village in Ritchie County.
- Villa**; post village in Kanawha County.
- Vincen**; post village in Wetzel County.

- Viney**; mountain, a ridge in Pocahontas County.  
**Vinton**; post village in Nicholas County.  
**Viola**; post village in Marshall County.  
**Virgie**; post village in Clay County.  
**Viropa**; post village in Harrison County on the Baltimore and Ohio Railroad.  
**Vista**; post village in Raleigh County.  
**Vivian**; post village in McDowell County on the Norfolk and Western Railway and on Elkhorn Creek. Altitude, 1,502 feet.  
**Volcano**; post village in Wood County on the Baltimore and Ohio Railroad.  
**Volga**; post village in Barbour County on the Baltimore and Ohio Railroad.  
**Waddles**; run, a right-hand branch of Short Creek in Ohio County.  
**Wade**; fork, a left-hand branch of Little Sycamore Creek, a tributary to Elk River, in Clay County.  
**Wade**; post village in Wetzel County.  
**Wadestown**; post village in Monongalia County.  
**Wagner Knob**; summit in Pendleton County.  
**Wainville**; post village in Webster County.  
**Waites**; run, a small right-hand tributary to Cacapon River in Hardy County.  
**Waiteville**; post village in Monroe County.  
**Waldo**; post village in Putnam County.  
**Walker**; fork, a right-hand branch of Conyer Fork, a tributary to Cedar Creek, in Braxton County.  
**Walker**; post village in Wood County on the Baltimore and Ohio Railroad.  
**Walker Ridge**; short spur in Grant County.  
**Walkers**; creek, a small left-hand branch of Ohio River in western Virginia.  
**Walkersville**; post village in Lewis County.  
**Wall**; branch, a very small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.  
**Wallace**; branch, a very small left-hand tributary to Guyandot River, in Wyoming County.  
**Wallace**; post village in Harrison County on the Baltimore and Ohio Railroad.  
**Wallow Hole**; fork, a small left-hand tributary to Buffalo Creek, a branch of Elk River, in Clay County.  
**Wallow Hole**; mountain, a short spur east of Greenbrier River in Greenbrier County. Altitude, 2,000 to 2,500 feet.  
**Wallow Hole Knob**; summit in Clay County.  
**Walnut**; creek, a very small left-hand tributary to Elk River in Kanawha County.  
**Walnut**; fork, a small right-hand tributary to Elk River in Braxton County.  
**Walnut**; gap, a height in Wyoming County. Altitude, 2,716 feet.  
**Walnut**; post village in Calhoun County.  
**Walnut**; run, a small right-hand tributary to Left Fork of Steer Creek in Braxton County.  
**Walnutgrove**; post village in Roane County on the Charleston, Clendennin and Sutton Railroad.  
**Walnut Knob**; summit in Clay County.  
**Walton**; post village in Roane County on the Chesapeake and Ohio Railway.  
**Wanless**; post village in Pocahontas County on the Cairo and Kanawha Valley Railroad.  
**Wappocomo**; post village in Hampshire County.  
**War**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.  
**War**; creek, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.  
**Warden**; post village in Raleigh County.

- Warden**; run, a right-hand tributary of Little Wheeling Creek in Ohio County.
- Wardensville**; town and post village in Hardy County. Population, 152.
- Ward Knob**; summit in Randolph County.
- Wards**; run, a small right-hand tributary to Valley River in Randolph County.
- Warfield**; post village in Clay County on the Porters Creek and Gauley Railroad.
- Warford**; post village in Summers County.
- Warm Hollow**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Warren**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Warrior**; fork, a left-hand branch of Buffalo Creek in Marion County.
- Washburn**; post village in Ritchie County.
- Wash Hill**; fork, a left-hand tributary to Horse Creek, a branch of Little Coal River, in Boone County.
- Washington**; post village in Wood County on the Baltimore and Ohio Railroad.
- Wasp**; post village in Pleasants County.
- Watering Pond**; small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.
- Watering Pond Knob**; summit in Pocahontas County.
- Waterloo**; post village in Mason County.
- Watkins**; post village in Tyler County.
- Watson**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Watson**; island in Kanawha River in Kanawha County.
- Watson (Capon Springs)**; town in Marion County. Population, 18.
- Watts**; branch, a very small left-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Wattsville**; post village in Clay County.
- Waverly**; post village in Wood County on the Baltimore and Ohio Railroad.
- Way**; run, a left-hand branch of South Fork of Fishing Creek in Wetzel County.
- Wayne**; county, situated in the southwestern part of the State on the lower slopes of the Allegheny Plateau. It is drained mainly by Twelvepole Creek. Area, 545 square miles. Population, 23,619—white, 23,298; negro, 321; foreign born, 51. County seat, Wayne. The mean magnetic declination in 1900 was 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Norfolk and Western and the Chesapeake and Ohio railways.
- Wayne**; county seat of Wayne county on the Norfolk and Western Railway.
- Wayside**; post village in Monroe County.
- Weaver**; post village in Randolph County on the Belington and Beaver Creek Railroad.
- Weavers Knob**; summit in Greenbrier County. Altitude, 2,931 feet.
- Webster**; county, situated in the central part of the State, on the Allegheny Plateau, and drained by tributaries to Little Kanawha River. Area, 590 square miles. Population, 8,862—white, 8,850; negro, 12; foreign born, 74. County seat, Addison. The mean magnetic declination in 1900 was 2° 10'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Baltimore and Ohio Railroad.
- Webster**; post village in Taylor County on the Baltimore and Ohio Railroad. Altitude, 1,022 feet.
- Webster Springs**; county seat of Webster County. Population, 297.
- Weiss Knob**; summit of Canaan Mountain in Tucker County. Altitude, 4,490 feet.
- Welch**; county seat of McDowell County at junction of Elkhorn Creek with Tug Fork of Big Sandy River and on the Norfolk and Western Railway. Altitude, 1,297 feet. Population, 442.



- Welcome**; post village in Marshall County.
- Wellford**; post village in Kanawha County.
- Wellington**; post village in Roane County.
- Wells**; post village in Marshall County on the Baltimore and Ohio Railroad.
- Wells**; run, a right-hand branch of Buffalo Creek in Brooke County.
- Wellsburg**; county seat of Brooke County on the Pittsburg, Cincinnati, Chicago and St. Louis Railroad. Population, 2,588. Altitude, 635 feet.
- Welsh Glade**; summit in Webster County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway. Altitude, 2,222 feet.
- Wesley**; post village in Wood County.
- West**; fork, a large right-hand branch of Pond Fork of Little Coal River in Boone County.
- West**; post village in Wetzel County.
- West**; run, a right-hand branch of Monongahela River in Monongalia County.
- West Columbia**; village in Mason County on the Baltimore and Ohio Railroad. Population, 205.
- West End**; post village in Preston County on the Baltimore and Ohio Railroad. Altitude, 945 feet.
- Westfall**; fork, a small right-hand branch of Cedar Creek in Braxton County.
- West Liberty**; post village in Ohio County.
- West Milford**; town in Harrison County. Population, 187.
- Weston**; county seat of Lewis County on the Baltimore and Ohio Railroad. Altitude, 824 feet.
- West Union**; county seat of Doddridge County on the Baltimore and Ohio Railroad. Population, 623. Altitude, 800 feet.
- Wet**; branch, a left-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Wetzel**; county, situated in the northwestern part of the State, bordering on Ohio River and lying at the foot of the slope of the Allegheny Plateau. Area, 365 square miles. Population, 22,880—white, 22,440; negro, 439; foreign born, 393. County seat, New Martinsville. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Ohio River and the Baltimore and Ohio railroads.
- Wharncliffe**; post village in Mingo County on the Norfolk and Western Railway. Altitude, 822 feet.
- Wheatland**; post village in Jefferson County on the Norfolk and Western Railway.
- Wheeler**; fork, a small right-hand tributary to Skin Creek in Lewis County.
- Wheeler**; small islands in Kanawha River in Fayette County.
- Wheeling**; creek, a small left-hand branch of Ohio River, rising in Pennsylvania and flowing west into Ohio River.
- Wheeling**; county seat of Ohio County on the Baltimore and Ohio, the Pittsburg, Cincinnati, Chicago and St. Louis, and the Wheeling and Lake Erie railroads. Altitude, 645 feet.
- Whetstone**; creek, a left-hand branch of Fish Creek in Wetzel County.
- Whetstone**; post village in Clay County.
- Whetstone**; run, a small left-hand tributary to South Branch of Potomac River in Pendleton County.
- Whetstone**; run, a right-hand branch of Buffalo Creek in Marion County.
- Whisler**; run, a left-hand branch of Dunkard Creek in Monongalia County.
- Whitcomb**; post village in Greenbrier County on the Chesapeake and Ohio Railway.
- White**; post village in Preston County.
- White**; run, a right-hand tributary of Potomac River in Berkeley County.
- Whiteday**; post village in Monongalia County.

- Whiteman**; branch, a small right-hand branch of Aaron Fork of Little Sandy Creek, a tributary to Elk River, in Kanawha County.
- Whiteoak**; branch, a very small right-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Whiteoak**; branch, a very small right-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Whiteoak**; branch, a small right-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Whiteoak**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Whiteoak**; branch, a small left-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Whiteoak**; branch, a very small left-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Whiteoak**; creek, a left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.
- Whiteoak**; creek, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.
- Whiteoak**; creek, a small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Whiteoak**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- White Oak**; fork, a small indirect left-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.
- White Oak**; fork, a small right-hand tributary to Williams River in Webster County.
- Whiteoak**; fork, a small right-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.
- White Oak**; mountain, a short ridge north of Williams River, in Webster County. Altitude, 3,500 feet.
- White Oak**; mountain, a broken mountainous range, forming the boundary between Raleigh and Summers counties. Altitude, 3,418 feet.
- Whiteoak**; post village in Ritchie County.
- White Oak**; run, a small right-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Whitepine**; post village in Calhoun County.
- White Rock**; mountain, a short ridge east of Greenbrier River in Greenbrier County. Altitude, 2,500 to 3,212 feet, the latter the height of one peak.
- Whites**; branch, a small right-hand tributary to West Fork, a branch of Pond Fork of Little Coal River, in Boone County.
- Whites**; run, a left-hand branch of Cheat River in Monongalia County.
- Whites Creek**; post village in Wayne County.
- Whites Draft**; small left-hand tributary to Anthony Creek, a branch of Greenbrier River, in Greenbrier County.
- Whites Trace**; very small left-hand tributary to Spruce Fork of Little Coal River in Logan County.
- White Sulphur Springs**; post village in Greenbrier County on Howards Creek and on the Chesapeake and Ohio Railway. Altitude, 2,000 feet.
- Whitewater**; small left-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Whitfield**; post village in Ohio County.
- Whitman**; run, a small left-hand tributary to Valley River in Randolph County.
- Whitman Flats**; summit in Randolph County.
- Whitman Knob**; summit in Randolph County.

- Whitmans**; run, a small left-hand tributary to Anthony Creek, a branch of Greenbrier River, in Greenbrier County.
- Wick**; post village in Tyler County.
- Wickwire**; run, a right-hand branch of Tygarts Valley River in Taylor County.
- Wide Mouth**; creek, a left-hand tributary to Bluestone River in Mercer County.
- Wiggins**; post village in Summers County on the Chesapeake and Ohio Railway.
- Wikel**; post village in Monroe County.
- Wilbur**; post village in Tyler County.
- Wildcat**; post village in Lewis County.
- Wild Cat**; run, a small left-hand tributary to Skin Creek in Lewis County.
- Wild Cat Knob**; summit in Nicholas County. Altitude, 2,837 feet.
- Wilderness**; fork, a middle fork of Fork Creek, a tributary to Coal River, in Boone County.
- Wilding**; post village in Jackson County.
- Wiley**; fork, a right-hand branch of North Fork of Fishing Creek in Wetzel County.
- Wiley Spring**; branch, a small left-hand tributary to Devils Fork, a branch of Guyandot River, in Raleigh County.
- Wileyville**; post village in Wetzel County.
- Wilkinson**; branch, a very small left-hand tributary to Pocotaligo River, a branch of Kanawha River, in Kanawha County.
- Willey**; fork, a right-hand branch of North Fork of Fishing Creek in Wetzel County.
- Willey**; post village in Monongalia County.
- William**; post village in Tucker County on the West Virginia Central and Pittsburg Railway.
- William Camp**; run, a small right-hand tributary to Gauley River in Webster County.
- Williams**; fork, a left-hand tributary to Trace Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Williams**; river, a large left-hand branch of Gauley River, rising in Pocahontas County, and flowing northwesterly through Webster County to its mouth.
- Williamsburg**; post village in Greenbrier County.
- Williamson**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Williamson**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Williamson**; county seat of Mingo County on the Norfolk and Western Railway.
- Williamson**; station in Logan County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Williamsport**; post village in Grant County, situated on Patterson Creek. Altitude, 988 feet.
- Williams River**; mountain, a ridge extending from Webster County into Pocahontas. Altitude, 3,000 to 4,000 feet.
- Williamstown**; post village in Wood County.
- Willis**; branch, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Willow**; post village in Pleasants County.
- Willowbend**; post village in Monroe County.
- Willowdale**; post village in Jackson County.
- Willowgrove**; post village in Jackson County, on the Baltimore and Ohio Railroad.
- Willowton**; post village in Mercer County.
- Willowtree**; post village in Jackson County.
- Wills**; creek, a left-hand branch of Little Sandy Creek, a tributary to Elk River, in Kanawha County.

- Wilmore**; station in McDowell County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Wilmoth**; run, a small right-hand tributary to Valley River in Randolph County.
- Wilson**; branch, a small left-hand branch of Laurel Creek, a tributary to New River, in Fayette County.
- Wilson**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Wilson**; creek, a small right-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Wilson**; fork, a small left-hand branch of Laurel Patch Run in Braxton County.
- Wilson**; post village in Grant County on North Fork of Potomac River and on the West Virginia Central and Pittsburg Railway. Altitude, 2,512 feet.
- Wilson**; run, a small right-hand tributary to South Fork of Potomac River in Hardy and Pendleton counties.
- Wilson**; run, a right-hand branch of South Fork of Fishing Creek in Wetzel County.
- Wilsonburg**; post village in Harrison County, on the Baltimore and Ohio Railroad.
- Wilsondale**; post village in Wayne County on the Chesapeake and Ohio Railway and on the Right Fork of Twelvepole Creek.
- Wilsonia**; post village and railway station in Grant county, situated on North Branch of Potomac River, also on West Virginia Central and Pittsburgh Railway. Altitude, 2,747 feet.
- Wilson Knob**; summit in Upshur County.
- Winding Gulf**; right-hand head fork of Guyandot River in Raleigh County.
- Wind Mill**; gap, in Great Flat Top Mountain in Mercer County.
- Windmill Gap**; branch, a right-hand tributary to North Fork of Elkhorn Creek in McDowell County.
- Windom**; post village in Wyoming County on the West Virginia Central and Pittsburg Railway.
- Windy**; post village in Wirt County.
- Windy**; run, a small right-hand tributary to Little Birch River in Braxton County.
- Windy**; run, a small right-hand tributary to Valley River in Randolph County.
- Winfield**; county seat of Putnam County. Population, 338.
- Wingrove**; branch, a small right-hand tributary to Sand Lick Creek, a branch of Marsh Fork of Coal River, in Raleigh County.
- Winifrede**; post village in Kanawha County on the Chesapeake and Ohio Railway and the Winifrede Railroad.
- Winnie**; village in Wirt County.
- Winona**; post village in Fayette County.
- Winters**; run, a right-hand tributary of Wheeling Creek in Marshall County.
- Wirt**; county, situated in the western part of the State on the lower slope of the Alleghany Plateau. Area, 254 square miles. Population, 10,284—white, 10,220; negro, 64; foreign born, 19. County seat, Elizabeth. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Little Kanawha Railroad.
- Wise**; post village in Monongalia County.
- Wise**; run, a left-hand branch of West Virginia Fork of Dunkard Creek in Monongalia County.
- Wiseburg**; post village in Jackson County.
- Witchers**; creek, a left-hand tributary to Kanawha River in Kanawha County.
- Wolf**; creek, a small left-hand tributary to Greenbrier River in Summers County, joining it at The Big Bend.

- Wolf**; creek, a small left-hand tributary to Greenbrier River in Monroe County.
- Wolf**; creek, a small left-hand tributary to Bluestone River in Mercer County.
- Wolf**; a left-hand tributary to New River in Fayette County.
- Wolf**; creek, a left-hand branch of Skin Creek, a tributary to West Fork of Monongahela River, in Lewis County.
- Wolf**; creek, a left-hand tributary to Elk River in Braxton County.
- Wolf**; creek, a small right-hand tributary to Cheat River in Preston County.
- Wolf**; gap in Pretty Ridge in Wyoming County.
- Wolf**; hill in Morgan County. Elevation, 900 feet.
- Wolf**; run, a small right-hand tributary to Skin Creek in Lewis County.
- Wolf**; run, a right-hand branch of Fish Creek in Wetzel County.
- Wolf Creek**; mountain, a short ridge in Monroe County. Altitude, 2,500 to 2,810 feet, the highest point the height of one peak.
- Wolf Creek**; mountain, a short, curved ridge in Summers County. Altitude, 2,000 to 2,500 feet.
- Wolfcreek**; post village in Monroe County on the Chesapeake and Ohio Railway.
- Wolf Fork**; mountain, a short ridge in Lewis County.
- Wolfpen**; branch, a very small right-hand branch of Big Sycamore Creek, a tributary to Elk River, in Clay County.
- Wolf Pen**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Wolfpen**; branch, a very small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Wolfpen**; branch, a small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Wolfpen**; branch, a small right-hand branch of Little Sandy Creek, a tributary to Elk River, in Kanawha County.
- Wolfpen**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.
- Wolfpen**; branch, a very small left-hand tributary to Clear Fork of Guyandot River in Wyoming County.
- Wolf Pen**; run, a small left-hand tributary to Birch River in Braxton County.
- Wolf Pen**; run, a small left-hand tributary to West Fork of Monongahela River in Lewis County.
- Wolf Pen**; run, a right-hand branch of Sand Fork in Lewis County.
- Wolf Pen**; run, a small right-hand branch of Stewart Creek in Gilmer County.
- Wolf Pen**; run, a small right-hand tributary to Right Fork of Steer Creek in Braxton County.
- Wolf Pen Ridge**; short range in the central part of Pocahontas County.
- Wolfpit**; fork, a small left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.
- Wolfrun**; post village in Marshall County.
- Wolf Summit**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Womelsdorf**; post village in Randolph County.
- Wood**; county, situated in the western part of the State on the Ohio River and lying at the foot of the Allegheny Plateau. Area, 357 square miles. Population, 34,452—white, 33,528; negro, 922; foreign born, 925. County seat, Parkersburg. The mean magnetic declination in 1900 was 1° 10'. The mean annual rainfall is 40 to 50 inches, and the temperature 50° to 55°. The county is traversed by the Baltimore and Ohio, the Baltimore and Ohio Southwestern, the Little Kanawha, and Ohio River railroads.
- Woodbine**; post village in Nicholas County.

- Woodlands**; post village in Marshall County.
- Woodrow**; post village in Morgan County on the West Virginia Central and Pittsburgh Railway.
- Woodruff**; post village in Marshall County on the Baltimore and Ohio Railroad.
- Woodrum**; branch, a very small right-hand branch of Powellton Fork of Armstrong Creek, a tributary to Kanawha River, in Fayette County.
- Woods**; run, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Woods**; run, a right-hand branch of Wheeling Creek in Ohio County.
- Woodward**; branch, a small right-hand branch of Twomile Creek, a tributary to Kanawha River, in Kanawha County.
- Woodyard**; post village in Roane County.
- Woodzell**; post village in Webster County.
- Woosley**; post village in Wyoming County.
- Workman**; branch, a small right-hand tributary to Pond Fork of Little Coal River, a branch of Coal River, in Boone County.
- Workman**; branch, a very small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Workman**; creek, a small left-hand tributary to Clear Fork of Coal River in Raleigh County.
- Workman Knob**; summit in Boone County.
- Worley**; post village in Monongalia County on the Chesapeake and Ohio Railway.
- Worth**; post village in McDowell County.
- Worthington**; post village in Marion County on the Baltimore and Ohio Railroad.
- Wrack Timber**; run, a small right-hand tributary to Holly River in Webster County.
- Wright**; post village in Raleigh County on the Chesapeake and Ohio Railway.
- Wyant**; fork, a right-hand branch of Grass Run in Gilmer County.
- Wyatt**; post village in Harrison County.
- Wyatt**; run, a left-hand branch of Left Fork of Steep Creek in Braxton County.
- Wylies**; falls in New River on boundary between Mercer and Summers counties.
- Wyoma**; post village in Mason County.
- Wyoming**; county, situated in the southern part of the State and drained by Guyandot River. The Allegheny Plateau is here deeply dissected. Area, 526 square miles. Population, 8,380—white, 8,286; negro, 94; foreign born, 5. County seat, Oceana. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°.
- Yankeedam**; post village in Clay County on the Charleston, Clendennin and Sutton Railroad.
- Yeager**; post village in Mason County.
- Yeager**; run, a left-hand branch of West Virginia Fork of Dunkard Creek in Monongalia County.
- Yelk**; post village in Pocahontas County.
- Yellow**; creek, a small right-hand tributary to Blackwater River in Tucker County.
- Yellowspring**; post village in Hampshire County.
- Yellow Spring**; run, a left-hand branch of Sleepy Creek in Morgan County.
- Yew**; mountains, a broken mountainous range extending into Greenbrier and Webster counties. Altitude, 3,000 to 4,000 feet.
- Yokum**; post village in Upshur County.
- Yokums Knob**; summit in the Allegheny Mountains in Randolph County. Altitude, 4,330 feet.
- Yorkville**; post village in Wayne County.
- Youngs**; mountain, a summit in Day Mountain in Pocahontas County.

**Youngs Knob**; summit in Kanawha County.

**Zackville**; post village in Wirt County.

**Zar**; post village in Preston County.

**Zebs**; creek, a small left-hand tributary to Valley River in Barbour and Randolph counties.

**Zela**; post village in Nicholas County.

**Zenith**; post village in Monroe County.

**Zinnia**; post village in Doddridge County.

**Zona**; post village in Roane County.

**Zypho**; post village in Harrison County.



## PUBLICATIONS OF UNITED STATES GEOLOGICAL SURVEY.

[Bulletin No. 233.]

The publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Professional Papers, (4) Bulletins, (5) Mineral Resources, (6) Water-Supply and Irrigation Papers, (7) Topographic Atlas of United States—folios and separate sheets thereof, (8) Geologic Atlas of United States—folios thereof. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists may be had on application.

The Professional Papers, Bulletins, and Water-Supply Papers treat of a variety of subjects, and the total number issued is large. They have therefore been classified into the following series: A, Economic geology; B, Descriptive geology; C, Systematic geology and paleontology; D, Petrography and mineralogy; E, Chemistry and physics; F, Geography; G, Miscellaneous; H, Forestry; I, Irrigation; J, Water storage; K, Pumping water; L, Quality of water; M, General hydrographic investigations; N, Water power; O, Underground waters; P, Hydrographic progress reports. This bulletin is the forty-first in Series F, the complete list of which follows (all are bulletins thus far):

### SERIES F, GEOGRAPHY.

5. Dictionary of altitudes in United States, by Henry Gannett. 1884. 325 pp. (Out of stock; see Bulletin 160.)
6. Elevations in Dominion of Canada, by J. W. Spencer. 1884. 43 pp. (Out of stock.)
18. Boundaries of United States and of the several States and Territories, with historical sketch of territorial changes, by Henry Gannett. 1885. 135 pp. (Out of stock; see Bulletin 171.)
48. On form and position of sea level, by R. S. Woodward. 1888. 88 pp. (Out of stock.)
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70. Report on astronomical work of 1889 and 1890, by R. S. Woodward. 1890. 79 pp.
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## II

## PUBLICATIONS U. S. GEOLOGICAL SURVEY.

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187. Geographic dictionary of Alaska, by Marcus Baker. 1901. 446 pp. (Out of stock.)
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231. Gazetteer of Maryland, by Henry Gannett. 1904. 84 pp.
232. Gazetteer of Virginia, by Henry Gannett. 1904. 159 pp.
233. Gazetteer of West Virginia, by Henry Gannett. 1904. 164 pp.

Correspondence should be addressed to

The DIRECTOR,

UNITED STATES GEOLOGICAL SURVEY,

WASHINGTON, D. C.

AUGUST, 1904.

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### U. S. Geological survey.

**Series.** Bulletins.  
no. 233. Gannett, Henry. A gazetteer of West Virginia. 1904.

### U. S. Dept. of the Interior.

**Reference** see also  
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1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

Bulletin No. 284

*J. C. Tanner*  
Series F, Geography, 42

DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

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GEOGRAPHIC  
TABLES AND FORMULAS  
(SECOND EDITION)

COMPILED BY

SAMUEL S. GANNETT



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904



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## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., April 21, 1904.*

SIR: I have the honor to transmit herewith, in form for publication, the second edition (with corrections and additions) of certain geographic tables and formulas pertaining to the work of the topographic branch of this Survey. As stated in the letter of transmittal of the first edition, published as Bulletin 214, the endeavor has been to bring together all tables and formulas used by the topographer in the field and office, and it is believed that their publication will be useful not only to the topographic corps but to others engaged in similar lines of work. The material has been drawn from various sources, some of it having been prepared from time to time by various members of the Geological Survey and the remaining portions having been taken principally from publications of the United States Coast and Geodetic Survey and the Smithsonian Institution.

The matter has been revised by Mr. E. M. Douglas and Mr. H. L. Baldwin, jr.

Very respectfully,

S. S. GANNETT,  
*Geographer in Charge*  
*Section of Triangulation and Computing.*

Hon. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*



# GEOGRAPHIC TABLES AND FORMULAS.

(SECOND EDITION.)

Compiled by S. S. GANNETT.

## RULES FOR SOLUTION OF RIGHT-ANGLED TRIANGLES.

The "parts" of the figures are—

H=hypotenuse,

P=perpendicular,

B=base,

and the six circular functions of the angle  $\alpha$  at the base of the triangle.

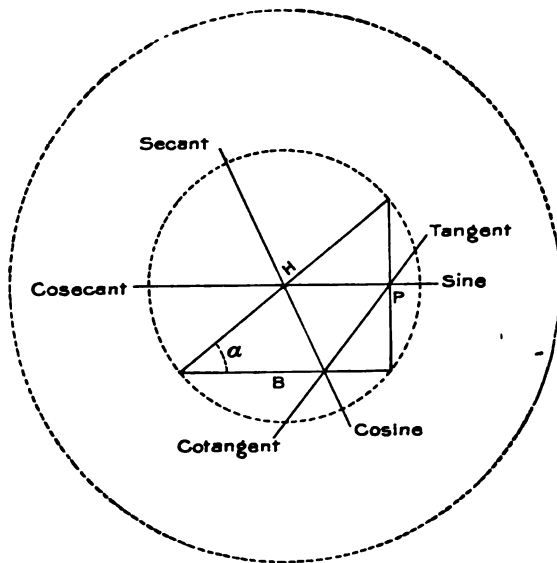


FIG. 1.—Solution of right-angled triangles.

**RULE I.** The product of two opposite parts = 1,  $\therefore$  either is the reciprocal of the other.

Example:  $\tan \alpha \times \cot \alpha = 1$ ,  $\tan \alpha = \frac{1}{\cot \alpha}$ .

**Rule II.** Each part=adjacent part divided by the following part,  $\therefore$  each part=the product of the adjacent parts.

Example:  $\sin \alpha = \frac{\cos \alpha}{\cot \alpha}$ ,  $\sin \alpha = \frac{P}{H}$ ,  $B = H \times \cos \alpha$ .

## REDUCTION TO CENTER.

In fig. 2 let

P=place of instrument;

C=center of station;

Q=measured angle at P between two objects, A and B;

$y$ =angle at P between C and the left-hand object, B;

$r$ =distance CP;

$C'$ =unknown and required angle at C;

D=distance AC;

( $r$  and D must be reduced to same unit, usually meters.)

G=distance BC;

A=angle at A between P and C;

B=angle at B between P and C.

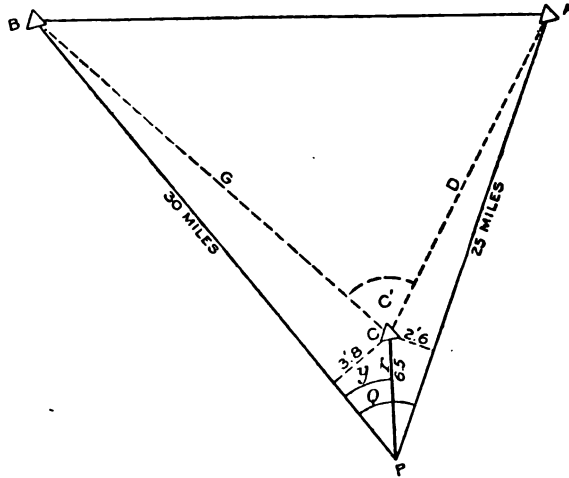


FIG. 2.—Reduction to center.

Then, from the relation between the parts of the triangle,

$$G : r :: \sin y : \sin B;$$

hence

$$\sin B = \frac{r \sin y}{G}.$$

As the angles at A and B are very small, their sines may be regarded as equal to  $A \sin 1''$  and  $B \sin 1''$ , respectively; hence

$$B = (\text{in seconds}) \frac{r \sin y}{G \sin 1''}$$

and

$$C' = Q + \frac{r \sin (Q \pm y)}{D \sin 1''} - \frac{r \sin y}{G \sin 1''}.$$

In the use of this formula, proper attention should be paid to the signs of  $\sin (Q+y)$  and  $\sin y$ ; for the first term will be positive only when  $(Q+y)$  is less than  $180^\circ$  (the reverse with  $\sin y$ );  $D$  being the distance of the right-hand object, the graduation of the instrument running from left to right.

$r$  being relatively small, the lengths of  $D$  and  $G$  are approximately computed with the angle  $Q$ .

The following quantities must be known in addition to the measured angles in order to find the correction for reducing to center:

1. The angle measured at the instrument,  $P$ , between the center of the signal or station,  $C$ , and the first-observed station to the right of it,  $A$ .

2. The distance from the center of the instrument to the center of the station =  $r$ .

3. The approximate distances,  $D$ ,  $G$ , etc., from the station occupied to the stations observed. The latter may be computed from the uncorrected angles.

Example: Reduction to center from  $P$  to  $C$ .

Constants: a. c.  $\log \sin 1''$  = 5.31443  
                   log feet to log meters = 9.48402

log constant (for any station)      4.79845  
 $r=6.5$  feet: log                              = 0.81291

log constant for this station          5.61136

	Angle Q-Y (CPA) 23° 40'	Angle Y (BPC) 37° 14' or 322° 46'
log sin angle .....	9.6036	9.7818
a. c. log distance .....	5.3954	5.3162
log $r$ + constant .....	5.6114	5.6114
log correction .....	0.6104	0.7094
correction to direction .....	4".08	5".12
correction to angle B P A = 4".08 + 5".12 = 9".20.		

## GRAPHIC REDUCTION TO CENTER.

Approximate closure errors of triangles may be tested in the field before distances have been computed by scaling from the plot the distances between stations in miles and the perpendicular distance in feet from signal to line joining instrument and distant station.

Then, since 1 foot at a distance of 40 miles subtends an angle of 1" (nearly),

$$\frac{\text{length of perpendicular in feet} \times 40}{\text{number of miles}} = \text{correction in seconds.}$$

Example: Station P. Correction for swing on line B P, 30 miles in length from instrument to signal

$$= \frac{3.8 \text{ feet} \times 40}{30} = 5''.1,$$

correction for swing on line A P, 25 miles in length,

$$= \frac{2.6 \text{ feet} \times 40}{25} = 4''.2,$$

and correction to angle B P A = Q to reduce from instrument to signal =  $5.1'' + 4.2'' = 9.3''$ , agreeing closely with the exact computation.

## APPROXIMATE SPHERICAL EXCESS IN SECONDS.

This may be obtained by dividing the area of the triangle in square miles by 75.5.

## SOLUTION OF TRIANGLES.

Given two sides and included angle, to solve the triangle:

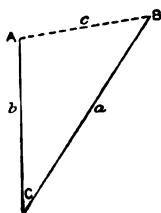


FIG. 3.—Solution of triangles; two sides and included angle given.

Let  $x$  be an auxiliary angle; then

$$\tan x = \frac{b}{a}, \text{ or } \log \tan x = \log a - \log b;$$

$$\tan \frac{1}{2} (A - B) = \tan (x - 45^\circ) \tan \frac{1}{2} (A + B);$$

$$\frac{1}{2} (A + B) + \frac{1}{2} (A - B) = A;$$

$$\frac{1}{2} (A + B) - \frac{1}{2} (A - B) = B;$$

from which remaining parts can be computed.

Example:

<p>Given <math>\log a = 4.3666779</math>          Given <math>\log b = 4.2050498</math></p> <hr style="width: 50%; margin: 5px auto;"/> <p>(1) <math>\tan x = 0.1616281</math>  <math>x = 55^\circ 25' 25''.41</math></p> <hr style="width: 50%; margin: 5px auto;"/> <p style="text-align: center;">-45</p> <hr style="width: 50%; margin: 5px auto;"/> <p>(5) <math>\log \tan (x - 45^\circ) = 10^\circ 25' 25''.41 = 9.2647291</math>          (6) <math>\log \tan \quad \quad \quad 79 \quad 22 \quad 33.00 = 0.7268100</math></p> <hr style="width: 50%; margin: 5px auto;"/> <p>(7) <math>9.9915391 = \tan \frac{1}{2} (A - B) \quad \quad \quad = 44 \quad 26 \quad 30.90</math></p> <hr style="width: 50%; margin: 5px auto;"/> <p style="text-align: center;">(10)</p>	<p>Given <math>C</math> (spherical angle) <math>21^\circ 14' 54''.10</math>          Given <math>\frac{1}{2}</math> sph. exc. <math>\quad \quad \quad - .10</math></p> <hr style="width: 50%; margin: 5px auto;"/> <p><math>C</math> (plane angle) <math>= 21 \quad 14 \quad 54.00</math> (2)</p> <hr style="width: 50%; margin: 5px auto;"/> <p style="text-align: center;">180</p> <hr style="width: 50%; margin: 5px auto;"/> <p><math>180^\circ - C = A + B = 158 \quad 45 \quad 06.00</math> (3)</p> <hr style="width: 50%; margin: 5px auto;"/> <p><math>\frac{1}{2} (A + B) = 79^\circ 22' 33''.00</math> (4)</p> <hr style="width: 50%; margin: 5px auto;"/> <p style="text-align: center;">sum <math>= A = 123^\circ 49' 03''.90</math> (8)          difference <math>= B = 34 \quad 56 \quad 02.10</math> (9)</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Check.			
$A = 123^\circ 49' 03''.90$	a. c.	$\log a$	$= 4.3666779$
$B = 34 \quad 56 \quad 02.10$		$\log \sin A$	$= 0.0804971$
$C = 21 \quad 14 \quad 54.00$		$\log \sin B$	$= 9.7578749$
		$\log \sin C$	$= 9.5592012$
<hr/>			
Sum = 180 00 00 .00		$\log c$	$= 4.0063762$
		$\log b$	$= 4.2050499$

### THREE-POINT PROBLEM.

If three points, forming a triangle of which the sides and angles are known or can be computed, be visible from a fourth point, P, it is required to determine the position of P.

Set up the theodolite at P and measure the two angles subtended by any two of the given sides.

This problem is of use in cases where, the regular triangulation having been completed, additional points are required for the topographic survey, or are needed for special service. The angles should be carefully measured, and in the computations the logarithms should be carried to seven places of decimals.

Three cases of its application are given, as in others, such as when P falls upon one or another of the sides of the known triangle, or on the prolongation of either, the case resolves itself into the solution of a simple triangle with one side and the angles given; or the problem is indeterminate, as when P is situated on the circumference of the circle passing through the three known points—a contingency which rarely occurs.



*Example for each of the three cases.*

Given the side	$a=11204.5$	Angle observed	$\angle P C=P'$
Given the side	$b=7289.0$	Angle observed	$\angle P B=P''$
Given the side	$c=6273.8$	To find	$\angle A B P=x$
Given the angle	$A=111^{\circ} 10' 54''$	To find	$\angle A C P=y$

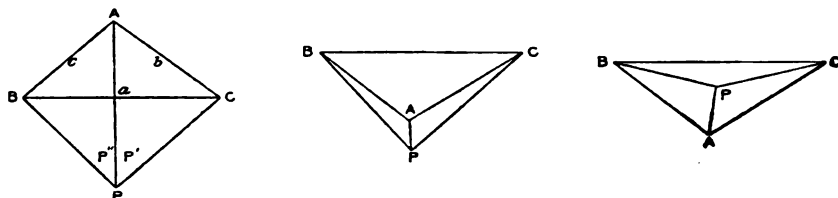


FIG. 4.—Three-point problem; computation.

$P' \dots 50^{\circ} 06' 12''$	$P' \dots 49^{\circ} 47' 20''$	$P' \dots 104^{\circ} 00' 00''$
$P'' \dots 43^{\circ} 50' 38''$	$P'' \dots 44^{\circ} 09' 30''$	$P'' \dots 100^{\circ} 20' 00''$
$S \dots 180^{\circ} - \frac{1}{2}(A + P' + P'')$	$S \dots \frac{1}{2}(A - P' - P'')$	$S \dots 180^{\circ} - \frac{1}{2}(A + P' + P'')$
$S \dots 77^{\circ} 26' 08''$	$S \dots 8^{\circ} 37' 02''$	$S \dots 22^{\circ} 14' 33''$

$$\tan Z = \frac{c \sin P'}{b \sin P''}$$

$$\epsilon = \frac{1}{2}(x - y)$$

$$\tan \epsilon = \cot(Z + 45^{\circ}) \tan S$$

$$x = S + \epsilon \quad y = S - \epsilon, \text{ but if } \tan \epsilon \text{ be negative, then } x = S - \epsilon, \quad y = S + \epsilon$$

### Computation.

$\log c \dots 3.7975307$	$\log c \dots 3.7975397$	$\log c \dots 3.7975307$
$\log \sin P' \dots 9.8849100$	$\log \sin P' \dots 9.8839061$	$\log \sin P' \dots 9.9869041$
$\text{colog } b \dots 6.1373320$	$\text{colog } b \dots 6.1373320$	$\text{colog } b \dots 6.1373320$
$\text{colog } \sin P'' \dots 0.1594574$	$\text{colog } \sin P'' \dots 0.1569894$	$\text{colog } \sin P'' \dots 0.0071016$
$\log \tan Z \dots 9.9792301$	$\log \tan Z \dots 9.9747583$	$\log \tan Z \dots 9.9288684$
$Z \dots 43^{\circ} 37' 49''.6$	$Z \dots 43^{\circ} 20' 09''.2$	$Z \dots 40^{\circ} 19' 43''.3$
$\log \cot(Z + 45^{\circ}) \dots 8.3785397$	$\log \cot(Z + 45^{\circ}) \dots 8.4631818$	$\log \cot(Z + 45^{\circ}) \dots 8.9122794$
$\log \tan S \dots 0.6519386$	$\log \tan S \dots 9.1805366$	$\log \tan S \dots 9.6116787$
$\log \tan \epsilon \dots 9.0304783$	$\log \tan \epsilon \dots 7.6437184$	$\log \tan \epsilon \dots 8.5239581$
$\epsilon \dots 6^{\circ} 07' 21''.7$	$\epsilon \dots 0^{\circ} 15' 08''.1$	$\epsilon \dots 1^{\circ} 54' 50''.04$
$S \dots 77^{\circ} 26' 08''.0$	$S \dots 8^{\circ} 37' 02''.0$	$S \dots 22^{\circ} 14' 33''.00$
$x \dots 83^{\circ} 33' 29''.7$	$x \dots 8^{\circ} 52' 10''.1$	$x \dots 24^{\circ} 09' 23''.00$
$y \dots 71^{\circ} 18' 46''.3$	$y \dots 8^{\circ} 21' 53''.9$	$y \dots 20^{\circ} 19' 43''.00$
Hence,	Hence,	Hence,
$\angle P A B \dots 52^{\circ} 35' 52''.3$	$\angle P A B \dots 126^{\circ} 58' 19''.9$	$\angle P A B \dots 55^{\circ} 30' 37''.00$
$\angle P A C \dots 58^{\circ} 35' 01''.7$	$\angle P A C \dots 121^{\circ} 50' 46''.1$	$\angle P A C \dots 55^{\circ} 40' 17''.00$

As all the angles and a side in each triangle are now known, the other sides, or the distances from P to the three given points, can be readily computed.

P B .....	<sup>m</sup> 7194.87	P B .....	<sup>m</sup> 7194.94	P B .....	<sup>m</sup> 5256.29
P A .....	8999.89	P A .....	1388.54	P A .....	2609.75
P C .....	8107.98	P C .....	8107.91	P C .....	6203.63
P A .....	8999.89	P A .....	1388.54	P A .....	2609.75

The results are verified when both triangles give the same value for the line P A.

#### GRAPHIC SOLUTION OF THE THREE-POINT PROBLEM.

1. When new point is within the triangle formed by the three points, point sought is within the triangle of error.

2. When new point is on or near the circle passing through the other points, *the location is uncertain*.

3. When new point is within either of the three shaded segments of the circle (see diagram below), orient on middle point; then the line from middle point lies between true point and point of intersection of lines from other two points.

4. When new point is without the circle, orient on most distant point; then the point sought is always on the same side of the line from most distant point as the point of intersection of the other two lines.

NOTE.—Since a location can be made from any three points, whether correctly plotted or not, therefore always check such locations by means of a fourth point if possible.

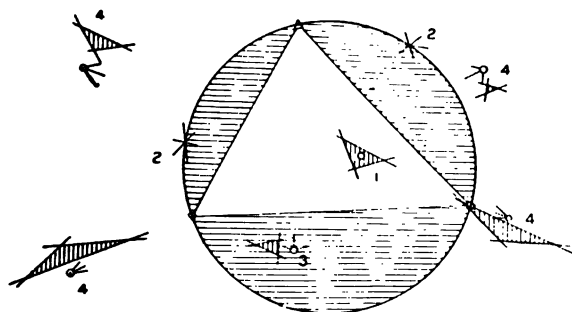


FIG. 5.—Three-point problem; graphic solution.

## METHOD OF FIXING A MERIDIAN AT ANY TIME BY HOUR ANGLE.

[Extracted from United States Land Survey Manual.]

The annexed diagram (fig. 6) will show in their proper relation the various aspects of Polaris in its daily apparent motion around the north-polar point.

This must be carefully studied, as the illustration of Table 1, for finding at any hour the hour angle and azimuth of Polaris, and the resulting meridian, at times when more direct methods are not available.

*Hour angle of Polaris.*—In fig. 6 the full vertical line represents a portion of the meridian passing through the zenith Z (the point directly overhead), and intersecting the northern horizon at the north point N, from which, for surveying purposes, the azimuths of Polaris

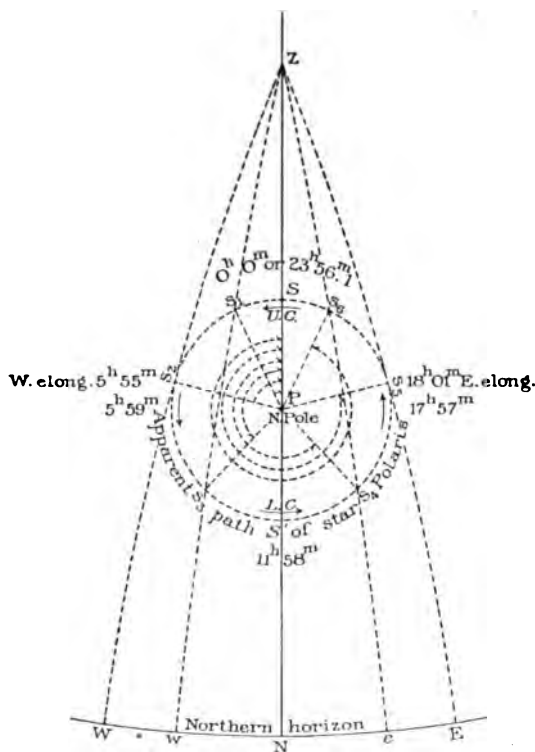


FIG. 6.—Aspects of Polaris.

are reckoned east or west. The meridian is pointed out by the plumb line when it is in the same plane with the eye of the observer and Polaris on the meridian, and a visual representation is also seen in the vertical wire of the transit, when it covers the star on the meridian.

When Polaris crosses the meridian it is said to culminate; above the

pole (at S), the passage is called the upper culmination, in contradistinction to the lower culmination (at S').

In the diagram—which the surveyor may better understand by holding it up perpendicular to the line of sight when he looks toward the pole—Polaris is supposed to be on the meridian, where it will be about noon on April 10 of each year. The star appears to revolve around the pole, in the direction of the arrows, once in every  $23^{\text{h}} 56^{\text{m}}.1$  of mean solar time; it consequently comes to and crosses the meridian, or culminates, nearly four minutes earlier each successive day. The apparent motion of the star being uniform, one quarter of the circle will (omitting fractions) be described in  $5^{\text{h}} 59^{\text{m}}$ , one half in  $11^{\text{h}} 58^{\text{m}}$ , and three quarters in  $17^{\text{h}} 57^{\text{m}}$ . For the positions  $s_1, s_2, s_3$ , etc., the angles  $SPs_1, SPs_2, SPs_3$ , etc., are called hour angles of Polaris, for the instant the star is at  $s_1, s_2$ , or  $s_3$ , etc., and they are measured by the arcs  $Ss_1, Ss_2, Ss_3$ , etc., expressed (in these instructions) in mean solar (common clock) time, and are always counted from the upper meridian (at S), to the west, around the circle from  $0^{\text{h}} 0^{\text{m}}$  to  $23^{\text{h}} 56^{\text{m}}.1$ , and may have any value between the limits named. The hour angles, measured by the arcs  $Ss_1, Ss_2, Ss_3, Ss_4, Ss_5$ , and  $Ss_6$ , are approximately  $1^{\text{h}} 8^{\text{m}}, 5^{\text{h}} 55^{\text{m}}, 9^{\text{h}} 4^{\text{m}}, 14^{\text{h}} 52^{\text{m}}, 18^{\text{h}} 01^{\text{m}}$ , and  $22^{\text{h}} 48^{\text{m}}$ , respectively; their extent is also indicated graphically by broken fractional circles about the pole.

Suppose the star observed at the point  $S_3$ ; the time it was at S (the time of upper culmination), taken from the time of observation, will leave the arc  $Ss_3$ , or the hour angle at the instant of observation; similar relations will obtain when the star is observed in any other position; therefore, in general:

*Subtract the time of upper culmination from the correct local mean time of observation; the remainder will be the hour angle of Polaris expressed in time, or the "argument for Table 3."*

The observation may be made at any instant when Polaris is visible, the exact time being carefully noted.

## TABLES.

TABLE 1.—*Local mean (astronomical) time of the culminations and elongations of Polaris in the year 1902.*[From Magnetic Declination Tables, U. S. Coast and Geodetic Survey. Computed for latitude 40° north and longitude 90° or 6<sup>h</sup> west of Greenwich.]

Date.	East elonga- tion.	Upper culmi- nation.	West elonga- tion.	Lower culmi- nation.
1902	h m	h m	h m	h m
January 1.....	0 45.8	6 40.6	12 35.3	18 38.7
January 15.....	23 46.6	5 45.3	11 40.0	17 43.4
February 1.....	22 39.5	4 38.2	10 32.9	16 36.3
February 15.....	21 44.2	3 42.9	9 37.7	15 41.0
March 1.....	20 49.0	2 47.7	8 42.4	14 45.8
March 15.....	19 54.0	1 52.7	7 47.3	13 50.7
April 1.....	18 47.0	0 45.6	6 40.3	12 43.7
April 15.....	17 52.0	23 46.7	5 45.3	11 48.6
May 1.....	16 49.1	22 43.8	4 42.5	10 45.7
May 15.....	15 54.2	21 48.9	3 47.6	9 50.8
June 1.....	14 47.5	20 42.3	2 40.9	8 44.2
June 15.....	13 52.6	19 47.4	1 46.0	7 49.3
July 1.....	12 50.0	18 44.8	0 43.4	6 46.7
July 15.....	11 55.1	17 49.9	23 44.6	5 51.8
August 1.....	10 48.6	16 43.4	22 38.0	4 45.3
August 15.....	9 53.7	15 48.5	21 43.1	3 50.4
September 1.....	8 47.1	14 41.9	20 36.5	2 43.8
September 15.....	7 52.2	13 47.0	19 41.6	1 48.9
October 1.....	6 49.3	12 44.1	18 38.7	0 46.0
October 15.....	5 54.3	11 49.1	17 43.7	23 47.2
November 1.....	4 47.5	10 42.3	16 36.9	22 40.4
November 15.....	3 52.3	9 47.1	15 41.8	21 45.2
December 1.....	2 49.3	8 44.1	14 38.8	20 42.2
December 15.....	1 54.0	7 48.8	13 43.6	19 46.9

A. *To refer the above tabular quantities to years subsequent to 1902:*

For year 1903 add 1.4 minutes.

1904	{ add 2.8 " up to March 1
	{ subtract 1.1 " on and after March 1
1905	add 0.2 "
1906	" 1.5 "
1907	" 2.9 "
1908	{ 4.2 " up to March 1
	{ 0.3 " on and after March 1
1909	" 1.7 "
1910	" 3.0 "

B. *To refer to any calendar day other than the first and fifteenth of each month:* SUBTRACT the quantities below from the tabular quantity for the PRECEDING DATE.

Day of month.	Minutes.	Number of days elapsed.
2 or 16	3.9	1
3 17	7.9	2
4 18	11.8	3
5 19	15.8	4
6 20	19.7	5
7 21	23.6	6
8 22	27.6	7
9 23	31.5	8
10 24	35.5	9
11 25	39.4	10
12 26	43.3	11
13 27	47.3	12
14 28	51.2	13
29	55.2	14
30	59.1	15
31	63.0	16

C. *To refer the table to standard time and to the civil or common method of reckoning:*

(<sup>a</sup>) ADD to the tabular quantities four minutes for every degree of longitude the place is west of the standard meridian, and SUBTRACT when the place is east of the standard meridian.

(<sup>b</sup>) The astronomical day begins twelve hours after the civil day, i. e., begins at noon on the civil day of the same date, and is reckoned from 0 to 24 hours. Consequently an astronomical time less than twelve hours refers to the same civil day, whereas an astronomical time greater than twelve hours refers to the morning of the next civil day.

It will be noticed that for the tabular year two eastern elongations occur on January 12 and two western elongations on July 12. There are also two upper culminations on April 12 and two lower culminations on October 12. The lower culmination either follows or precedes the upper culmination by  $11^h 58^m.1$ .

D. *To refer to any other than the tabular latitude between the limits of  $25^\circ$  and  $50^\circ$  north:* ADD to the time of west elongation  $0^m.13$  for every degree south of  $40^\circ$ , and SUBTRACT from the time of west elongation  $0^m.18$  for every degree north of  $40^\circ$ . Reverse these operations for correcting times of east elongation.

E. *To refer to any other than the tabular longitude: ADD 0<sup>m</sup>.16 for each 15° east of the ninetieth meridian, and SUBTRACT 0<sup>m</sup>.16 for each 15° west of the ninetieth meridian.*

A few examples will illustrate the use of table 1.

1. Required the time of upper culmination of Polaris for a station in longitude 90° west, for March 3, 1904.

	h.	m.
Astron. time, U. C. of Polaris, 1904, March 1 .....	2	46.6
Reduction for two days, 7 <sup>m</sup> .9 (B) (subtract) .....		7.9
Local mean time U. C. of Polaris, 1904, March 3 .....	2	38.7

The required time may also be obtained by using the table in the opposite direction, i. e., by taking the time for March 15, and adding the reduction as follows:

	h.	m.
Astron. time U. C. of Polaris, 1904, March 15 .....	1	51.6
Reduction for twelve days, add .....		47.3
Local mean time U. C. of Polaris, 1904, March 3 .....	2	38.9

In this case the two results are practically identical. If the computation is made both ways, the results will check each other. B has been inserted to save the surveyor the little trouble of making the multiplications; thus, for the above example, in the table under B, opposite the third or seventeenth day of the month in the left hand column, will be found the correction 7<sup>m</sup>.9.

Computing from a preceding date, for days between April 11 and 15 of any year, the reduction in B will be greater than the tabulated time of culmination, in which case 23<sup>h</sup> 56<sup>m</sup>.1 will be added, to make the subtraction possible.

2. Required, for a station in longitude 90° west, the time of U. C. of Polaris for April 14, 1906:

	h.	m.
Astron. time, U. C. of Polaris, 1906, April 1 .....	0	47.1
Add .....	23	56.1
Sum .....	24	43.2
Reduction to April 14, subtract .....		51.2
Local mean time U. C. of Polaris, April 14 .....	23	52.0

Working from a following date, for days between 9th and 15th of April, the sum will exceed 23<sup>h</sup> 56<sup>m</sup>.1, and when this occurs subtract 23<sup>h</sup> 56<sup>m</sup>.1 from the sum, and the remainder will be the required time.

3. Required, for a station in longitude 90° west, the time of U. C. of Polaris for April 10, 1904.

	h.	m.
Astron. time, U. C. of Polaris, 1904, April 15 .....	23	45.6
Reduction for five days, add .....		19.7
Sum .....	24	05.3
Subtract .....	23	56.1
Local mean time, U. C. of Polaris, 1904, April 10 .....	0	09.2

For further application of table 1 see pp. 26 and 27.

TABLE 2.—Azimuth of Polaris when at elongation for any year between 1902 and 1910.

Latitude.	1902.0	1903.0	1904.0	1905.0	1906.0	1907.0	1908.0	1909.0	1910.0
	° /	° /	° /	° /	° /	° /	° /	° /	° /
25°	1 20.5	1 20.1	1 19.8	1 19.4	1 19.1	1 18.7	1 18.4	1 18.1	1 17.7
26	21.1	20.8	20.5	20.1	19.8	19.4	19.1	18.7	18.4
27	21.9	21.5	21.2	20.8	20.5	20.1	19.8	19.4	19.1
28	22.6	22.2	21.9	21.6	21.3	20.9	20.5	20.1	19.8
29	23.4	23.0	22.7	22.4	22.1	21.7	21.3	20.9	20.5
30	24.2	23.9	23.5	23.1	22.8	22.4	22.1	21.7	21.3
31	25.1	24.7	24.4	24.0	23.6	23.2	22.9	22.5	22.2
32	26.0	25.6	25.3	24.9	24.5	24.1	23.8	23.4	23.1
33	27.0	26.6	26.2	25.9	25.5	25.1	24.7	24.3	24.0
34	28.0	27.6	27.2	26.9	26.5	26.1	25.7	25.3	25.0
35	29.0	28.7	28.3	27.9	27.5	27.1	26.8	26.4	26.0
36	30.1	29.8	29.4	29.0	28.6	28.2	27.9	27.5	27.1
37	31.3	30.9	30.5	30.1	29.7	29.3	29.0	28.6	28.2
38	32.6	32.2	31.8	31.4	31.0	30.6	30.2	29.8	29.4
39	33.9	33.5	33.1	32.7	32.3	31.8	31.4	31.0	30.6
40	35.2	34.8	34.4	34.0	33.6	33.2	32.8	32.4	32.0
41	36.7	36.2	35.8	35.4	35.0	34.6	34.2	33.8	33.4
42	38.2	37.7	37.3	36.9	36.5	36.0	35.6	35.2	34.8
43	39.8	39.3	38.9	38.5	38.1	37.6	37.2	36.8	36.3
44	41.4	41.0	40.5	40.1	39.7	39.2	38.8	38.4	37.9
45	43.2	42.7	42.3	41.8	41.4	40.9	40.5	40.1	39.6
46	45.0	44.6	44.2	43.7	43.2	42.7	42.3	41.9	41.4
47	46.9	46.5	46.0	45.6	45.1	44.6	44.2	43.7	43.3
48	49.0	48.6	48.1	47.7	47.2	46.7	46.3	45.8	45.3
49	51.2	50.7	50.2	49.8	49.3	48.8	48.4	47.9	47.4
50	1 53.5	1 53.0	1 52.5	1 52.0	1 51.5	1 51.0	1 50.6	1 50.1	1 49.6

The above table was computed with mean declination of Polaris for each year. A more accurate result will be had by applying to the tabular values the following correction, which depends on the difference of the mean and the apparent place of the star. The deduced azimuth will in general be correct within 0'.3.

For middle of—	Correction.	For middle of—	Correction.
	° /		° /
January .....	—0.4	July .....	+0.3
February .....	—0.3	August .....	+0.1
March .....	—0.2	September .....	—0.1
April .....	0.0	October .....	—0.3
May .....	+0.2	November .....	—0.6
June .....	+0.3	December .....	—0.8



TABLE 3.—Azimuths of *Polaris*[From U. S. Land Survey Manual. The hour angles are expressed in *mean solar time*. The occurrence

STAR AND AZIMUTH.									POLARIS <i>above</i> THE POLE.											
W. of N. when hour angle is <i>less</i> than 11 <sup>h</sup> 58 <sup>m</sup> . E. of N. when hour angle is <i>greater</i> than 11 <sup>h</sup> 58 <sup>m</sup> . Time argument, the star's hour angle (or 23 <sup>h</sup> 56 <sup>m</sup> .1 minus the star's hour angle), for the year—									To determine the true meridian, the azi- muth will be laid off to the <i>east</i> when the hour angle is <i>less</i> than 11 <sup>h</sup> 58 <sup>m</sup> , and to the <i>west</i> when <i>greater</i> than 11 <sup>h</sup> 58 <sup>m</sup> .											
Hours.									Azimuths for latitude—											
h.	0	1	2	3	4	5	6	7	30	32	34	36	38	40	42	44	46	48	50	
0	m. 0 5 9 14.	m. 0 5 9 14.	m. 0 5 9 14.	m. 0 5 9 14.	m. 0 5 9 14.	m. 0 5 10 14.	m. 0 5 10 14.	m. 0 5 10 15.	0 2 3 5.	0 2 3 5.	0 2 3 5.	0 2 3 5.	0 2 3 6.	0 2 3 6.	0 2 4 6.	0 2 4 6.	0 2 4 7.	0 2 4 7.	0 2 4 7.	
	19 24 28 33 38.	19 24 29 33 38.	19 24 29 33 38.	19 24 29 34 39.	19 24 29 34 39.	19 24 29 34 39.	19 24 29 34 39.	19 24 29 34 39.	7 9 10 12 14.	7 9 10 12 14.	7 9 10 12 14.	7 9 10 12 15.	8 9 10 12 15.	8 9 10 12 16.	8 9 11 13 17.	8 9 11 13 18.	9 9 11 13 18.	9 9 11 14 19.	12 14 16 17 19.	
	43 48 53 58.	43 48 53 58.	43 48 53 58.	44 49 54 59.	44 49 54 59.	44 49 54 59.	44 49 54 59.	44 49 54 59.	16 17 19 21.	16 18 20 22.	16 18 20 22.	17 18 20 22.	17 18 20 22.	17 18 20 22.	18 19 21 23.	18 19 21 23.	19 20 22 24.	19 20 22 25.	20 21 23 26.	
1	3 7 13 18 23 28.	3 8 13 18 23 28.	3 8 13 18 23 29.	3 8 13 19 24 29.	4 9 14 19 24 29.	4 9 14 19 24 30.	4 9 14 20 25 30.	5 10 15 20 25 31.	23 25 27 29 30 32.	23 25 27 29 30 32.	24 26 27 29 31 32.	24 26 27 29 31 33.	25 27 28 30 31 32.	25 27 28 30 31 33.	26 27 29 30 31 34.	26 27 29 30 31 34.	27 28 30 31 32 35.	27 28 30 31 32 35.	28 29 31 32 33 36.	
	33 38 44 49 54.	33 38 44 49 54.	34 39 45 50 55.	34 39 45 50 56.	35 40 46 51 57.	35 40 46 51 57.	35 40 46 51 57.	36 41 47 52 58.	33 35 37 39 40.	34 36 38 39 41.	35 37 38 40 42.	35 37 38 40 43.	36 38 39 41 42.	36 38 40 41 44.	37 39 40 42 46.	37 39 40 42 46.	38 40 41 43 47.	38 40 41 43 47.	39 41 42 44 48.	
2	0 6 11 17 23.	0 6 11 17 23.	1 7 12 18 24.	2 7 12 18 25.	2 8 13 19 26.	3 9 14 20 27.	4 9 14 20 27.	4 10 15 21 28.	42 44 46 48 49.	43 45 47 49 50.	44 46 48 49 51.	45 47 48 50 51.	45 47 49 50 52.	46 48 50 51 52.	46 48 50 51 53.	47 49 50 52 53.	47 49 51 52 54.	48 50 51 53 55.	48 50 51 53 55.	
	29 35 41 48 54.	30 36 42 49 55.	30 36 43 50 56.	31 37 44 51 57.	31 38 45 52 58.	32 39 46 53 59.	33 40 47 54 59.	34 41 48 55 60.	51 53 54 56 58.	52 54 55 57 59.	53 55 56 58 60.	53 55 56 58 60.	54 56 57 59 60.	54 56 58 60 62.	55 57 58 60 62.	56 58 59 61 64.	56 58 60 61 64.	57 59 61 62 64.	57 59 61 62 64.	
3	8 16 23 31.	10 17 25 33.	11 18 26 34.	12 19 27 35.	12 20 28 36.	13 21 29 37.	14 22 30 38.	15 23 31 40.	60 61 63 65 67.	61 63 65 66 68.	63 64 66 68 70.	64 66 68 70 72.	64 66 68 70 72.	65 67 69 71 73.	66 68 70 72 74.	66 68 70 72 74.	67 69 71 73 75.	68 70 72 74 76.	68 70 72 74 76.	
	39 48 58.	41 50 59.	43 52 61.	44 53 62.	46 55 64.	47 56 65.	49 57 66.	51 59 68.	69 70 72.	70 72 74.	72 74 76.	72 74 76.	73 75 77.	74 76 78.	74 76 78.	75 77 79.	75 77 79.	76 78 80.	76 78 80.	
4	8 19 32 46.	10 22 34 50.	11 24 37 53.	12 26 40 57.	13 27 41 58.	14 29 43 59.	16 31 46 60.	17 32 47 61.	72 74 76 77.	73 75 77 79.	74 76 78 80.	75 77 79 81.	75 77 79 81.	76 78 80 82.	76 78 80 82.	77 79 81 83.	77 79 81 83.	78 80 82 84.	78 80 82 84.	
5	5 40.	10 45.	16 51.	23 58.	32 65.	42 74.	52 84.	61 94.	81 83.	83 85.	85 87.	87 89.	88 91.	89 92.	90 93.	91 96.	92 99.	93 101.	94 103.	95 105.
									88 89.	89 91.	91 94.	92 97.	93 99.	94 100.	95 103.	96 105.	97 108.	98 107.	99 110.	100 112.



Table 3 gives for various hour angles, expressed in mean solar time and for even degrees of latitude from 30 to 50 degrees, the azimuths of Polaris for eight years, computed for average values of the north polar distance of the star, the arguments being the hour angle (or  $23^{\text{h}} 56^{\text{m}}.1$  minus the hour angle when the latter exceeds  $11^{\text{h}} 58^{\text{m}}$ ), which is termed the time argument,<sup>a</sup> and the latitude of the place of observation. The table is so extended that azimuths may be taken out by inspection and all interpolation avoided, except such as can be performed mentally.

The hours of the "time arguments" are placed in the columns headed "hours," on the left of each page. The minutes of the time arguments will be found in the columns marked "m," under the years for which they are computed, and they are included between the same heavy zigzag lines which inclose the hours to which they belong.

The time arguments are given to the nearest half minute; the occurrence of a period after the minutes of any one of them indicates that its value is  $0^{\text{m}}.5$  greater than printed, the table being so arranged to economize space.

The table will be used as follows: Find the *hours* of the time argument in the left-hand column of either page; then, between the heavy lines which inclose the hours, find the *minutes* in the column marked at the top with the current year. On the same horizontal line with the *minutes* the azimuth will be found under the given latitude, which is marked at the top of the right-hand half of each page. Thus, for 1904, time argument  $0^{\text{h}} 43^{\text{m}}$ , latitude  $36^{\circ}$ , find  $0^{\text{h}}$  on left-hand page, and under 1904 find  $43^{\text{m}}$  on tenth line from the top, and on same line with the minutes, under latitude  $36^{\circ}$ , is the azimuth  $0^{\circ} 17'$ . For 1908, time argument  $9^{\text{h}} 33\frac{1}{2}^{\text{m}}$ , latitude  $48^{\circ}$ , the azimuth is  $1^{\circ} 1\frac{1}{2}'$ , found on the twenty-first line from the top of right-hand page.

If the exact time argument is not found in the table, the azimuth should be proportioned to the difference between the given and tabular values of said argument.

The table has been arranged to give the azimuths by simple inspection. No written arithmetical work is required, all being performed mentally. It will always be sufficient to take the nearest whole degree of latitude and use it as above directed, except for a few values near the top of either page where the difference of azimuths for  $2'$  difference of latitude amounts to four or five minutes of arc.

<sup>a</sup>The vertical diameter  $SS'$ , fig. 6, divides the apparent path of Polaris into two equal parts, and for the star at any point  $s_0$  on the east side is a corresponding point  $s_1$  on the west side of the meridian, for which azimuth  $Nw$  is equal to the azimuth  $Nc$ . The arc,  $Ss_1 S's_0$ , taken from the entire circle (or  $23^{\text{h}} 56^{\text{m}}.1$ ), leaves the arc  $Ss_0$ , and its equal  $Ss_1$ , expressed in time, may be used to find, from table 3, the azimuth  $Nw$ , which is equal to  $Nc$ .

The hour angles entered in table 3 include only those of the west half of the circle ending at  $S$ , and when an hour angle greater than  $11^{\text{h}} 58^{\text{m}}$  results from observation it will be subtracted from  $23^{\text{h}} 56^{\text{m}}.1$ , and the remainder will be used as the "time argument" for the table. The surveyor should not confound these two quantities. The hour angle itself always decides the direction of the azimuth and defines the place of the star with reference to the pole and meridian, as noted at top of table 3. See examples.

The attention of the observer is directed to the fact that he should always use one day of twenty-four hours as the unit when he subtracts the time of culmination from the time of observation. In any case when the time of upper culmination, taken from table 1, for the given date would be numerically greater than the astronomical time of observation, the former time will be taken out for a date one day earlier than the date of observation. The surveyor will decide when such condition exists by comparing the time given in the table with his astronomical time of observation. (See Example 4 and explanations in footnotes, page 26.)

The watch time to be used when making observations on Polaris at all times except elongation should be as accurate as can be obtained. Looking at table 3 near top of page 22, the surveyor will observe that for a difference of four minutes in the time argument there is a change of about two minutes in azimuth; consequently, to obtain the azimuth to the nearest whole minute of arc, the local mean time, upon which all depends, should be known within two minutes. When the observer uses standard railroad time he will correct the same for the difference of longitude between his station and the standard meridian for which the time is given at the rate of four minutes of time for each degree of the difference in arc. Thus, if the difference in longitude is  $6^{\circ} 45'$ , the equivalent in time will be twenty-seven minutes. The difference of longitude may be taken from a good map. The correction will be subtracted from the standard railroad time of observation when the surveyor's station is west, or added when east of the standard meridian, as the case may require, to obtain local time. It is immaterial where the surveyor obtains the standard time provided he gets it right, a result which will be gained most easily by a direct personal comparison at a telegraph office.

If the direction of the meridian is known with an error not greater than one-fourth of a degree, the local time can be obtained to the nearest minute by observing the sun's transit by the following method, suggested by Mr. H. L. Baldwin, jr.

The transit being in meridian and carefully leveled, place the telescope so that it will point toward the sun at the time the latter comes to the meridian and allow the magnified image of the sun to fall upon a notebook or sheet of white paper about 1 foot distant from eyepiece. The telescope should be slightly out of focus (lengthened) to get best results, the best focal position to be determined by trial. When the vertical cross wire bisects the sun's image, note the time by watch. This will be the time of apparent noon. To get time of mean noon, correct the noted time by adding or subtracting the equation of time, taken from the Nautical Almanac "to reduce apparent noon to mean noon," or get this from any almanac giving "sun fast" or "sun slow" time.

*Example.*

June 20, 1903.			
Watch time of sun's transit .....	h.	m.	s.
Equation of time .....		+1	04
Local mean noon .....	11	51	29
Or watch slow .....		8	31

The error of observation should not exceed two or three seconds and the error resulting from incorrect meridian will be approximately four seconds for each 1' error in meridian.

## APPLICATIONS OF TABLES 1 AND 3.

1. Required the hour angle and azimuth of Polaris, for a station in latitude 46° N., longitude 90° W., at 8<sup>h</sup> 24<sup>m</sup> p. m., November 7, 1910.

Astronomical time of observation, 1910, November 7 .....	h.	m.	
Equivalent to time of November 6 .....	8	24.0	
	h.	m.	
Astron. time, U. C. Polaris, November 1 (table 1) ..	10	45.3	
Reduction to November 6 <sup>a</sup> (B), subtract .....		<sup>b</sup> 19.7	
Astron. time, U. C. Polaris, November 6 .....	10	25.6, subtract.	<sup>c</sup> 10 25.6
Hour angle of Polaris, at observation .....		21	58.4
Subtract from .....		<sup>d</sup> 23	56.1
Time argument for table 3 .....		1	57.7
Azimuth of Polaris, at observation .....		0°	51' E.

2. Required the hour angle and azimuth of Polaris, for a station in latitude 41° 12' N., longitude 94° W., at 6<sup>h</sup> 16<sup>m</sup> a. m., November 19, 1904.

Astronomical time of observation, 1904, November 18 .....	h.	m.	
	18	16.0	
	h.	m.	
Astron. time, U. C. Polaris, November 15 (table 1) ..	9	47.1	
Reduction to November 18, subtract .....		11.8	
Astron. time, U. C. Polaris, November 18 .....	9	35.3, subtract.	9 35.3
Hour angle of Polaris, at observation, and time argument for table 3 .....		<sup>e</sup> 8	40.7
Azimuth of Polaris, at observation (table 3), 72' or .....		<sup>f</sup> 1°	12' W.

The following four examples illustrate any difficulties in the use of tables 1 and 3:

<sup>a</sup> By reference to the above table, the surveyor will observe that the times, between November 1 and 15, are greater than 8<sup>h</sup> 24<sup>m</sup>; consequently, the culmination for one day earlier, November 6, will be used.

<sup>b</sup> From table 1, opposite sixth day of month.

<sup>c</sup> To subtract, take one day from November 7, and add its equivalent, 24<sup>h</sup>, to 8<sup>h</sup> 24<sup>m</sup>, making, November 6, 32<sup>h</sup> 24<sup>m</sup> (which is the time expressed by November 7, 8<sup>h</sup> 24<sup>m</sup>); then subtract in the usual manner.

<sup>d</sup> See last clause of footnote, page 24.

<sup>e</sup> In case the hour angle comes out greater than 11<sup>h</sup> 58<sup>m</sup>, subtract it from 23<sup>h</sup> 56<sup>m</sup>.1; see example 4, above.

<sup>f</sup> The hour angle being less than 11<sup>h</sup> 58<sup>m</sup>, the azimuth is west; see precepts, top of table 3.

## EVENING OBSERVATIONS.

1. February 20, 1904, at 7<sup>h</sup> 42<sup>m</sup>.5 p. m., local mean time, Polaris is observed at a station in southern California, latitude 36°, longitude 117°.

Time of observation .....	h.	m.
	7	42.5
From table 1, U. C. Polaris, February 15.....	h.	m.
	3	45.7
Reduction to February 20 .....		19.7
	3	26.0
Time elapsed since preceding culmination .....	4	16.5

From table 3 corresponding azimuth is  $80^{\circ}.5 = 1^{\circ} 20^{\circ}.5$ .

2. May 9, 1904, at 8<sup>h</sup> 56<sup>m</sup>.4 p. m., local mean time, Polaris is observed at a station in northeastern Minnesota, latitude 48°, longitude 90°. The nearest culmination is that of May 8.

Time of observation May 9, 1904, 8 <sup>h</sup> 56 <sup>m</sup> .4, or May 8.....	h.	m.
	32	56.4
From table 1, U. C., May 1, 1904.....	h.	m.
	22	42.7
Reduction to May 8 .....		27.6
	22	15.1

Time elapsed since preceding culmination..... 10 41.3  
From table 3, corresponding azimuth is 34°.

## MORNING OBSERVATIONS.

3. May 10, 1904, at 5<sup>h</sup> 13<sup>m</sup> a. m., local mean time, or May 9, 17<sup>h</sup> 13<sup>m</sup>, astronomical time, Polaris is observed at a station in northeastern Minnesota, latitude 48°, longitude 90°.

Time of observation, May 9, 1904.....	h.	m.
	17	13.0
From table 1, U. C., May 1 .....	h.	m.
	22	42.7
Reduction to May 9 .....		31.5
	22	11.2

Time to elapse to next following culmination..... 4 58.2  
From table 3 corresponding azimuth is  $104^{\circ}.3 = 1^{\circ} 44^{\circ}.3$

4. February 21, 1904, at 5<sup>h</sup> 10<sup>m</sup> a. m., local mean time, Polaris is observed at a station in southern California, latitude 36°, longitude 117°. The nearest culmination is on February 21.

Time of observation, February 20.....	h.	m.
	17	10.0
From table 1, U. C., February 15.....	h.	m.
	3	45.7
Reduction to February 20 .....		19.7
	3	26.0
	23	56.1
	27	22.1

Time to elapse to next following culmination..... 10 12.1  
From table 3, corresponding azimuth is 39°.

TABLE 4.—AZIMUTH AND APPARENT ALTITUDE OF POLARIS AT DIFFERENT HOUR ANGLES.

[From U. S. Coast and Geodetic Survey Report for 1895.]

The accompanying tables are intended for field use, to facilitate placing an instrument in the meridian. They are also suitable for determining the approximate latitude or meridian. They contain the azimuth of Polaris at intervals of fifteen minutes in hour angle for each degree of north latitude from  $30^{\circ}$  to  $60^{\circ}$ , and the apparent altitude at the same intervals and for each fifth degree of latitude.<sup>a</sup> The tables are computed for the declination of Polaris  $88^{\circ} 46'$ , but the rate of change in both azimuth and altitude is given with the argument  $1'$  increase in declination.<sup>b</sup> The tables are intended to be used in connection with the American Ephemeris, where are given the apparent right ascension and declination of Polaris for each day in the year. The approximate local time will in general be known with sufficient accuracy from standard time and the approximate longitude of the place. The following example explains the use of the tables and the derivation of the hour angle of Polaris:

Position, latitude  $36^{\circ} 20' N.$ , longitude  $5^h 20^m 30^s W.$  of Greenwich.

	h.	m.	s.
Time of observation, July 10, 1895, standard (75th mer.) mean time	8	52	40 p. m.
Reduction to local time	—	20	30
Local mean time	8	32	10
Reduction to sidereal time (Table III, Amer. Ephem.)	—	1	24
Sidereal time mean noon, Greenwich, July 10, 1895	7	12	38
Correction for longitude, $5^h 20^m 30^s$ (Table III, Amer. Ephem.)	—	0	53
Local sidereal time	15	47	05
Apparent right ascension of Polaris, July 10, 1895	1	20	18
Hour angle before upper culmination	9	33	13

<sup>a</sup>The tables were computed with the following formulas:

$$\begin{aligned} \sin t &= \frac{\sin \delta}{\cos \varphi} \\ \tan a &= \cos \varphi \tan \delta - \sin \varphi \cos t' \\ \sin h &= \sin \varphi \sin \delta + \cos \varphi \cos \delta \cos t, \\ \sin a_0 &= \frac{\cos \delta}{\cos \varphi}, \\ \cos t_0 &= \cot \delta \tan \varphi; \end{aligned}$$

where  $a$  = azimuth from true north,  
 $t$  = hour angle,  
 $\varphi$  = latitude,  
 $\delta$  = declination,  
 $h$  = true altitude,  
 $a_0$  = azimuth at elongation,  
 $t_0$  = hour angle at elongation.

<sup>b</sup>As the corrections are given with proper sign for increase in declination over  $88^{\circ} 46'$ , they are to be applied with reversed sign while the declination is less than  $88^{\circ} 46'$ , as it will be until near the close of the century.

	°	'	"		°	'
Declination of table	88	46				
Apparent declination, July 10, 1895	88	44	47			
	<hr/>					
Increase in declination	- 1	13	= -1'.2			
Values from tables (interpolated) azimuth	0	54	12	apparent altitude	35	21.8
Correction for -1'.2 increase in declination			+52			-1.0
	<hr/>					<hr/>
	0	55	04		35	20.8
	East of north					

It is to be remembered that Polaris is east of the meridian for twelve hours before upper culmination, and west of the meridian for twelve hours after. By setting the instrument at the apparent altitude and sweeping near the meridian Polaris can ordinarily be found and the instrument placed in the meridian some time before dark. With transit instruments not provided with horizontal arc, the value of the azimuth adjusting screw may be readily determined and used.

Without the American Ephemeris these tables may be conveniently used for obtaining the approximate meridian or latitude, in connection with Bulletin 14, United States Coast and Geodetic Survey,<sup>a</sup> where are given the approximate mean times of culminations of Polaris, and the mean declinations for various epochs.

<sup>a</sup> Approximate Times of Culminations and Elongations and of the Azimuths at Elongation of Polaris for the Years between 1889 and 1910.

The mean places of Polaris are given as follows:

	α			δ		
	h.	m.	s.	°	'	"
1895 .....	1	20	30.08	88	44	52.68
1900 .....	1	22	33.76	88	46	26.66
1905 .....	1	24	42.48	88	48	00.31
1910 .....	1	26	56.58	88	49	33.61



TABLE 4.—Azimuth and apparent altitude

Hour angle before or after upper culmination.	Azimuth of Polaris computed for declination 88° 48'.					
	Latitude 30°.	Latitude 31°.	Latitude 32°.	Latitude 33°.	Latitude 34°.	Latitude 35°.
<i>h. m.</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>
0 15	0 05 40	0 05 43	0 05 47	0 05 51	0 05 55	0 06 00
0 30	0 11 18	0 11 25	0 11 33	0 11 41	0 11 49	0 11 58
0 45	0 16 53	0 17 04	0 17 15	0 17 27	0 17 40	0 17 53
1 00	0 22 23	0 22 38	0 22 53	0 23 09	0 23 26	0 23 44
1 15	0 27 48	0 28 06	0 28 25	0 28 45	0 29 06	0 29 28
1 30	0 33 05	0 33 26	0 33 49	0 34 13	0 34 38	0 35 04
1 45	0 38 13	0 38 38	0 39 04	0 39 32	0 40 00	0 40 30
2 00	0 43 12	0 43 40	0 44 09	0 44 40	0 45 12	0 45 46
2 15	0 47 58	0 48 29	0 49 02	0 49 36	0 50 12	0 50 50
2 30	0 52 32	0 53 06	0 53 42	0 54 19	0 54 59	0 55 40
2 45	0 56 52	0 57 29	0 58 07	0 58 48	0 59 30	1 00 15
3 00	1 00 58	1 01 37	1 02 18	1 03 01	1 03 46	1 04 34
3 15	1 04 47	1 05 28	1 06 12	1 06 58	1 07 46	1 08 36
3 30	1 08 19	1 09 02	1 09 48	1 10 36	1 11 27	1 12 20
3 45	1 11 33	1 12 18	1 13 06	1 13 56	1 14 49	1 15 45
4 00	1 14 28	1 15 15	1 16 05	1 16 57	1 17 52	1 18 50
4 15	1 17 04	1 17 52	1 18 44	1 19 37	1 20 34	1 21 34
4 30	1 19 19	1 20 09	1 21 02	1 21 57	1 22 55	1 23 57
4 45	1 21 14	1 22 05	1 22 59	1 23 55	1 24 55	1 25 57
5 00	1 22 48	1 23 40	1 24 35	1 25 32	1 26 32	1 27 36
5 15	1 24 00	1 24 53	1 25 48	1 26 46	1 27 47	1 28 51
5 30	1 24 51	1 25 44	1 26 40	1 27 38	1 28 39	1 29 44
5 45	1 25 20	1 26 13	1 27 09	1 28 07	1 29 09	1 30 14
6 00	1 25 27	1 26 19	1 27 15	1 28 14	1 29 15	1 30 20
6 15	1 25 12	1 26 04	1 26 59	1 27 57	1 28 59	1 30 03
6 30	1 24 34	1 25 27	1 26 21	1 27 19	1 28 19	1 29 23
6 45	1 23 36	1 24 27	1 25 21	1 26 18	1 27 17	1 28 20
7 00	1 22 16	1 23 06	1 23 59	1 24 55	1 25 53	1 26 55
7 15	1 20 35	1 21 25	1 22 16	1 23 10	1 24 08	1 25 08
7 30	1 18 34	1 19 22	1 20 12	1 21 05	1 22 00	1 22 59
7 45	1 16 13	1 16 59	1 17 48	1 18 39	1 19 33	1 20 29
8 00	1 13 33	1 14 17	1 15 04	1 15 53	1 16 45	1 17 39
8 15	1 10 34	1 11 16	1 12 01	1 12 48	1 13 37	1 14 29
8 30	1 07 17	1 07 57	1 08 40	1 09 25	1 10 12	1 11 01
8 45	1 03 43	1 04 22	1 05 02	1 05 44	1 06 29	1 07 15
9 00	0 59 54	1 00 30	1 01 07	1 01 47	1 02 29	1 03 12
9 15	0 55 49	0 56 23	0 56 58	0 57 34	0 58 13	0 58 54
9 30	0 51 31	0 52 01	0 52 34	0 53 08	0 53 43	0 54 21
9 45	0 46 59	0 47 27	0 47 57	0 48 28	0 49 00	0 49 34
10 00	0 42 16	0 42 42	0 43 08	0 43 36	0 44 05	0 44 35
10 15	0 37 23	0 37 45	0 38 08	0 38 33	0 38 59	0 39 26
10 30	0 32 20	0 32 39	0 32 59	0 33 20	0 33 43	0 34 06
10 45	0 27 09	0 27 25	0 27 42	0 28 00	0 28 18	0 28 38
11 00	0 21 51	0 22 04	0 22 18	0 22 32	0 22 47	0 23 03
11 15	0 16 28	0 16 38	0 16 48	0 16 59	0 17 10	0 17 22
11 30	0 11 01	0 11 08	0 11 14	0 11 22	0 11 29	0 11 37
11 45	0 05 31	0 05 34	0 05 38	0 05 42	0 05 45	0 05 49
Elongation:						
Azimuth...	1 25 27	1 26 20	1 27 16	1 28 14	1 29 16	1 30 20
<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>
Hour angle.	5 57 09	5 57 02	5 56 55	5 56 48	5 56 40	5 56 33

*of Polaris at different hour angles.*

Azimuth of Polaris computed for declination 88° 46'.					Correction for 1' increase in declination of Polaris.		Hour angle before or after upper culmination.
Latitude 36°.	Latitude 37°.	Latitude 38°.	Latitude 39°.	Latitude 40°.	Latitude 30°.	Latitude 40°.	
° ' "	° ' "	° ' "	° ' "	° ' "	"	"	h. m.
0 06 05	0 06 10	0 06 15	0 06 20	0 06 26	— 5	— 5	0 15
0 12 08	0 12 18	0 12 28	0 12 39	0 12 50	— 9	— 10	0 30
0 18 07	0 18 22	0 18 38	0 18 54	0 19 11	— 14	— 16	0 45
0 24 02	0 24 22	0 24 43	0 25 04	0 25 27	— 18	— 21	1 00
0 29 51	0 30 15	0 30 41	0 31 08	0 31 36	— 23	— 26	1 15
0 35 31	0 36 00	0 36 31	0 37 02	0 37 36	— 27	— 31	1 30
0 41 02	0 41 35	0 42 11	0 42 47	0 43 26	— 31	— 36	1 45
0 46 22	0 47 00	0 47 39	0 48 21	0 49 04	— 35	— 40	2 00
0 51 29	0 52 11	0 52 55	0 53 41	0 54 29	— 39	— 45	2 15
0 56 23	0 57 09	0 57 57	0 58 47	0 59 40	— 43	— 49	2 30
1 01 02	1 01 51	1 02 43	1 03 37	1 04 34	— 46	— 53	2 45
1 05 24	1 06 17	1 07 12	1 08 10	1 09 12	— 50	— 57	3 00
1 09 29	1 10 25	1 11 24	1 12 25	1 13 30	— 53	— 60	3 15
1 13 16	1 14 14	1 15 16	1 16 21	1 17 29	— 56	— 63	3 30
1 16 43	1 17 44	1 18 49	1 19 57	1 21 08	— 58	— 66	3 45
1 19 50	1 20 54	1 22 01	1 23 11	1 24 25	— 61	— 69	4 00
1 22 36	1 23 42	1 24 51	1 26 03	1 27 20	— 63	— 72	4 15
1 25 01	1 26 08	1 27 19	1 28 33	1 29 52	— 64	— 74	4 30
1 27 03	1 28 12	1 29 24	1 30 40	1 32 00	— 66	— 75	4 45
1 28 42	1 29 52	1 31 06	1 32 23	1 33 44	— 68	— 76	5 00
1 29 59	1 31 09	1 32 24	1 33 42	1 35 04	— 69	— 77	5 15
1 30 52	1 32 03	1 33 18	1 34 37	1 35 59	— 69	— 78	5 30
1 31 21	1 32 33	1 33 48	1 35 07	1 36 30	— 70	— 78	5 45
1 31 27	1 32 39	1 33 54	1 35 13	1 36 35	— 70	— 78	6 00
1 31 10	1 32 21	1 33 36	1 34 54	1 36 16	— 69	— 78	6 15
1 30 30	1 31 40	1 32 54	1 34 11	1 35 32	— 68	— 77	6 30
1 29 26	1 30 35	1 31 48	1 33 04	1 34 24	— 67	— 76	6 45
1 27 59	1 29 07	1 30 18	1 31 33	1 32 52	— 66	— 75	7 00
1 26 11	1 27 17	1 28 26	1 29 39	1 30 56	— 65	— 73	7 15
1 24 00	1 25 04	1 26 12	1 27 23	1 28 38	— 64	— 72	7 30
1 21 28	1 22 30	1 23 36	1 24 45	1 25 57	— 62	— 69	7 45
1 18 36	1 19 36	1 20 39	1 21 45	1 22 54	— 60	— 66	8 00
1 15 24	1 16 21	1 17 22	1 18 25	1 19 31	— 57	— 64	8 15
1 11 53	1 12 48	1 13 45	1 14 45	1 15 48	— 54	— 61	8 30
1 08 04	1 08 56	1 09 50	1 10 47	1 11 47	— 51	— 58	8 45
1 03 58	1 04 47	1 05 38	1 06 31	1 07 27	— 48	— 54	9 00
0 59 37	1 00 22	1 01 09	1 01 59	1 02 51	— 45	— 50	9 15
0 55 00	0 55 42	0 56 25	0 57 11	0 57 59	— 42	— 46	9 30
0 50 10	0 50 48	0 51 27	0 52 09	0 52 53	— 38	— 42	9 45
0 45 08	0 45 42	0 46 17	0 46 54	0 47 34	— 34	— 38	10 00
0 39 54	0 40 24	0 40 55	0 41 28	0 42 03	— 30	— 34	10 15
0 34 30	0 34 57	0 35 24	0 35 52	0 36 22	— 26	— 29	10 30
0 28 59	0 29 20	0 29 43	0 30 07	0 30 32	— 22	— 24	10 45
0 23 19	0 23 37	0 23 55	0 24 14	0 24 35	— 18	— 20	11 00
0 17 35	0 17 48	0 18 02	0 18 16	0 18 31	— 13	— 15	11 15
0 11 46	0 11 54	0 12 04	0 12 13	0 12 23	— 9	— 10	11 30
0 05 53	0 05 58	0 06 02	0 06 07	0 06 12	— 4	— 5	11 45
1 31 28	1 32 40	1 33 55	1 35 14	1 36 36	— 69	— 78	
h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	s.	s.	
5 56 25	5 56 17	5 56 09	5 56 00	5 55 52	+ 2	+ 3	

TABLE 4.—Azimuth and apparent altitude

Hour angle before or after upper culmination.		Azimuth of Polaris computed for declination $88^{\circ} 46'$ .					
		Latitude $40^{\circ}$ .	Latitude $41^{\circ}$ .	Latitude $42^{\circ}$ .	Latitude $43^{\circ}$ .	Latitude $44^{\circ}$ .	Latitude $45^{\circ}$ .
	<i>h. m.</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>
	0 15	0 06 26	0 06 32	0 06 39	0 06 45	0 06 52	0 07 00
	0 30	0 12 50	0 13 03	0 13 15	0 13 29	0 13 43	0 13 58
	0 45	0 19 11	0 19 30	0 19 48	0 20 08	0 20 29	0 20 52
	1 00	0 25 27	0 25 51	0 26 16	0 26 43	0 27 10	0 27 40
	1 15	0 31 36	0 32 05	0 32 36	0 33 09	0 33 44	0 34 21
	1 30	0 37 36	0 38 11	0 38 48	0 39 27	0 40 09	0 40 52
	1 45	0 43 26	0 44 07	0 44 50	0 45 35	0 46 22	0 47 12
	2 00	0 49 04	0 49 50	0 50 39	0 51 29	0 52 23	0 53 19
	2 15	0 54 29	0 55 20	0 56 14	0 57 10	0 58 10	0 59 12
	2 30	0 59 40	1 00 35	1 01 34	1 02 36	1 03 41	1 04 49
	2 45	1 04 34	1 05 34	1 06 38	1 07 44	1 08 54	1 10 08
	3 00	1 09 12	1 10 16	1 11 24	1 12 35	1 13 50	1 15 09
	3 15	1 13 30	1 14 38	1 15 50	1 17 06	1 18 25	1 19 49
	3 30	1 17 29	1 18 41	1 19 57	1 21 16	1 22 39	1 24 08
	3 45	1 21 08	1 22 23	1 23 42	1 25 04	1 26 32	1 28 04
	4 00	1 24 25	1 25 43	1 27 05	1 28 31	1 30 01	1 31 37
	4 15	1 27 20	1 28 40	1 30 04	1 31 33	1 33 07	1 34 45
	4 30	1 29 52	1 31 14	1 32 41	1 34 12	1 35 48	1 37 29
	4 45	1 32 00	1 33 24	1 34 53	1 36 25	1 38 04	1 39 47
	5 00	1 33 44	1 35 10	1 36 40	1 38 14	1 39 54	1 41 38
	5 15	1 35 04	1 36 30	1 38 02	1 39 37	1 41 18	1 43 04
	5 30	1 35 59	1 37 26	1 38 58	1 40 34	1 42 16	1 44 02
	5 45	1 36 30	1 37 57	1 39 29	1 41 05	1 42 47	1 44 34
	6 00	1 36 35	1 38 02	1 39 34	1 41 10	1 42 51	1 44 38
	6 15	1 36 16	1 37 43	1 39 14	1 40 49	1 42 30	1 44 16
	6 30	1 35 32	1 36 58	1 38 28	1 40 03	1 41 42	1 43 27
	6 45	1 34 24	1 35 48	1 37 17	1 38 50	1 40 28	1 42 12
	7 00	1 32 52	1 34 15	1 35 42	1 37 13	1 38 49	1 40 31
	7 15	1 30 56	1 32 17	1 33 42	1 35 11	1 36 45	1 38 24
	7 30	1 28 38	1 29 56	1 31 19	1 32 46	1 34 17	1 35 53
	7 45	1 25 57	1 27 13	1 28 33	1 29 56	1 31 25	1 32 58
	8 00	1 22 54	1 24 07	1 25 24	1 26 45	1 28 10	1 29 40
	8 15	1 19 31	1 20 41	1 21 55	1 23 12	1 24 33	1 25 59
	8 30	1 15 48	1 16 55	1 18 05	1 19 18	1 20 35	1 21 57
	8 45	1 11 47	1 12 49	1 13 55	1 15 05	1 16 18	1 17 35
	9 00	1 07 27	1 08 26	1 09 28	1 10 33	1 11 41	1 12 54
	9 15	1 02 51	1 03 45	1 04 43	1 05 43	1 06 47	1 07 54
	9 30	0 57 59	0 58 49	0 59 42	1 00 38	1 01 37	1 02 38
	9 45	0 52 53	0 53 39	0 54 27	0 55 18	0 56 11	0 57 07
	10 00	0 47 34	0 48 15	0 48 58	0 49 44	0 50 32	0 51 22
	10 15	0 42 03	0 42 39	0 43 18	0 43 58	0 44 40	0 45 25
	10 30	0 36 22	0 36 53	0 37 26	0 38 01	0 38 38	0 39 16
	10 45	0 30 32	0 30 58	0 31 26	0 31 55	0 32 26	0 32 58
	11 00	0 24 35	0 24 56	0 25 18	0 25 42	0 26 06	0 26 32
	11 15	0 18 31	0 18 47	0 19 04	0 19 22	0 19 40	0 20 00
	11 30	0 12 23	0 12 34	0 12 45	0 12 57	0 13 09	0 13 23
	11 45	0 06 12	0 06 18	0 06 23	0 06 29	0 06 36	0 06 42
Elongation:							
Azimuth...		1 36 36	1 38 03	1 39 35	1 41 11	1 42 53	1 44 40
		<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>
Hour angle.		5 55 52	5 55 43	5 55 34	5 55 24	5 55 14	5 55 04

of *Polaris* at different hour angles—Continued.

Azimuth of <i>Polaris</i> computed for declination 88° 46'.					Correction for 1' increase in declination of <i>Polaris</i> .		Hour angle before or after upper culmination.
Latitude 46°.	Latitude 47°.	Latitude 48°.	Latitude 49°.	Latitude 50°.	Latitude 46°.	Latitude 50°.	
° ' "	° ' "	° ' "	° ' "	° ' "	"	"	h. m.
0 07 08	0 07 16	0 07 25	0 07 34	0 07 44	— 5	— 6	0 15
0 14 13	0 14 30	0 14 48	0 15 06	0 15 25	—10	—13	0 30
0 21 15	0 21 40	0 22 06	0 22 33	0 23 02	—16	—19	0 45
0 28 11	0 28 44	0 29 18	0 29 55	0 30 33	—21	—25	1 00
0 34 59	0 35 40	0 36 23	0 37 08	0 37 56	—26	—32	1 15
0 41 38	0 42 26	0 43 17	0 44 11	0 45 08	—31	—38	1 30
0 48 05	0 49 01	0 49 59	0 51 02	0 52 07	—36	—43	1 45
0 54 19	0 55 22	0 56 28	0 57 38	0 58 52	—40	—49	2 00
1 00 18	1 01 28	1 02 41	1 03 59	1 05 21	—45	—54	2 15
1 06 01	1 07 17	1 08 38	1 10 03	1 11 32	—49	—59	2 30
1 11 26	1 12 48	1 14 15	1 15 47	1 17 24	—53	—64	2 45
1 16 32	1 18 00	1 19 33	1 21 11	1 22 54	—57	—68	3 00
1 21 17	1 22 50	1 24 29	1 26 13	1 28 02	—60	—72	3 15
1 25 40	1 27 18	1 29 02	1 30 51	1 32 46	—63	—76	3 30
1 29 41	1 31 23	1 33 11	1 35 05	1 37 06	—66	—80	3 45
1 33 17	1 35 03	1 36 55	1 38 54	1 40 59	—69	—83	4 00
1 36 29	1 38 18	1 40 14	1 42 16	1 44 25	—72	—86	4 15
1 39 15	1 41 08	1 43 06	1 45 11	1 47 24	—74	—88	4 30
1 41 35	1 43 30	1 45 31	1 47 39	1 49 54	—75	—90	4 45
1 43 29	1 45 25	1 47 28	1 49 38	1 51 55	—76	—91	5 00
1 44 55	1 46 53	1 48 57	1 51 08	1 53 27	—77	—92	5 15
1 45 54	1 47 53	1 49 58	1 52 10	1 54 30	—78	—93	5 30
1 46 26	1 48 25	1 50 30	1 52 43	1 55 03	—78	—94	5 45
1 46 31	1 48 29	1 50 34	1 52 46	1 55 06	—78	—93	6 00
1 46 08	1 48 05	1 50 10	1 52 21	1 54 40	—78	—93	6 15
1 45 18	1 47 14	1 49 17	1 51 27	1 53 44	—77	—92	6 30
1 44 01	1 45 56	1 47 56	1 50 04	1 52 20	—76	—91	6 45
1 42 18	1 44 10	1 46 09	1 48 14	1 50 27	—75	—89	7 00
1 40 09	1 41 59	1 43 54	1 45 57	1 48 06	—73	—87	7 15
1 37 35	1 39 21	1 41 14	1 43 13	1 45 19	—72	—85	7 30
1 34 36	1 36 19	1 38 08	1 40 03	1 42 05	—69	—82	7 45
1 31 14	1 32 53	1 34 38	1 36 29	1 38 26	—66	—79	8 00
1 27 29	1 29 04	1 30 44	1 32 30	1 34 22	—64	—78	8 15
1 23 23	1 24 53	1 26 28	1 28 09	1 29 55	—61	—72	8 30
1 18 56	1 20 21	1 21 51	1 23 26	1 25 07	—58	—68	8 45
1 14 10	1 15 30	1 16 54	1 18 23	1 19 57	—54	—64	9 00
1 09 05	1 10 19	1 11 38	1 13 01	1 14 28	—50	—59	9 15
1 03 44	1 04 52	1 06 04	1 07 21	1 08 41	—46	—55	9 30
0 58 07	0 59 09	1 00 15	1 01 24	1 02 38	—42	—50	9 45
0 52 16	0 53 12	0 54 11	0 55 13	0 56 19	—38	—45	10 00
0 46 12	0 47 01	0 47 53	0 48 49	0 49 47	—34	—40	10 15
0 39 57	0 40 40	0 41 25	0 42 12	0 43 02	—29	—34	10 30
0 33 32	0 34 08	0 34 46	0 35 26	0 36 08	—24	—29	10 45
0 27 00	0 27 28	0 27 59	0 28 31	0 29 05	—20	—23	11 00
0 20 20	0 20 42	0 21 05	0 21 29	0 21 55	—15	—18	11 15
0 13 36	0 13 51	0 14 06	0 14 22	0 14 39	—10	—12	11 30
0 06 49	0 06 56	0 07 04	0 07 12	0 07 21	— 5	— 6	11 45
1 46 32	1 48 31	1 50 36	1 52 48	1 55 08	—78	—93	
h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	s.	s.	
5 54 53	5 54 42	5 54 31	5 54 20	5 54 07	+ 3	+ 5	

TABLE 4.—Azimuth and apparent altitude

Hour angle before or after upper culmination.	Azimuth of Polaris computed for declination 88° 46'.					
	Latitude 50°.	Latitude 51°.	Latitude 52°.	Latitude 53°.	Latitude 54°.	Latitude 55°.
<i>h. m.</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>
0 15	0 07 44	0 07 54	0 08 05	0 08 17	0 08 29	0 08 42
0 30	0 15 25	0 15 46	0 16 08	0 16 31	0 16 56	0 17 22
0 45	0 23 02	0 23 33	0 24 06	0 24 41	0 25 18	0 25 57
1 00	0 30 33	0 31 14	0 31 58	0 32 44	0 33 33	0 34 25
1 15	0 37 56	0 38 47	0 39 40	0 40 38	0 41 38	0 42 43
1 30	0 45 08	0 46 08	0 47 12	0 48 20	0 49 32	0 50 49
1 45	0 52 07	0 53 17	0 54 31	0 55 49	0 57 12	0 58 41
2 00	0 58 52	1 00 11	1 01 34	1 03 03	1 04 37	1 06 16
2 15	1 05 21	1 06 48	1 08 21	1 09 59	1 11 43	1 13 33
2 30	1 11 32	1 13 08	1 14 48	1 16 35	1 18 29	1 20 30
2 45	1 17 24	1 19 07	1 20 55	1 22 51	1 24 54	1 27 04
3 00	1 22 54	1 24 44	1 26 41	1 28 44	1 30 55	1 33 15
3 15	1 28 02	1 29 59	1 32 02	1 34 13	1 36 32	1 39 00
3 30	1 32 46	1 34 49	1 36 58	1 39 16	1 41 42	1 44 18
3 45	1 37 06	1 39 14	1 41 29	1 43 52	1 46 25	1 49 07
4 00	1 40 59	1 43 12	1 45 32	1 48 01	1 50 39	1 53 27
4 15	1 44 25	1 46 42	1 49 07	1 51 40	1 54 23	1 57 16
4 30	1 47 24	1 49 44	1 52 13	1 54 50	1 57 37	2 00 35
4 45	1 49 54	1 52 17	1 54 49	1 57 29	2 00 20	2 03 21
5 00	1 51 55	1 54 21	1 56 54	1 59 37	2 02 31	2 05 35
5 15	1 53 27	1 55 54	1 58 29	2 01 15	2 04 10	2 07 16
5 30	1 54 30	1 56 58	1 59 34	2 02 20	2 05 16	2 08 23
5 45	1 55 03	1 57 31	2 00 08	2 02 53	2 05 50	2 08 58
6 00	1 55 06	1 57 34	2 00 10	2 02 56	2 05 52	2 08 58
6 15	1 54 40	1 57 06	1 59 41	2 02 26	2 05 21	2 08 26
6 30	1 53 44	1 56 09	1 58 43	2 01 25	2 04 18	2 07 22
6 45	1 52 20	1 54 42	1 57 14	1 59 54	2 02 44	2 05 45
7 00	1 50 27	1 52 47	1 55 15	1 57 52	2 00 39	2 03 36
7 15	1 48 06	1 50 23	1 52 48	1 55 21	1 58 04	2 00 57
7 30	1 45 19	1 47 32	1 49 52	1 52 21	1 54 59	1 57 47
7 45	1 42 05	1 44 13	1 46 29	1 48 52	1 51 26	1 54 08
8 00	1 38 26	1 40 29	1 42 40	1 44 58	1 47 25	1 50 01
8 15	1 34 22	1 36 20	1 38 25	1 40 38	1 42 58	1 45 27
8 30	1 29 55	1 31 48	1 33 47	1 35 52	1 38 06	1 40 28
8 45	1 25 07	1 26 53	1 28 45	1 30 44	1 32 50	1 35 04
9 00	1 19 57	1 21 37	1 23 22	1 25 13	1 27 11	1 29 17
9 15	1 14 28	1 16 01	1 17 38	1 19 22	1 21 12	1 23 08
9 30	1 08 41	1 10 06	1 11 36	1 13 12	1 14 53	1 16 40
9 45	1 02 38	1 03 55	1 05 17	1 06 44	1 08 16	1 09 53
10 00	0 56 19	0 57 28	0 58 42	1 00 00	1 01 23	1 02 50
10 15	0 49 47	0 50 48	0 51 53	0 53 02	0 54 15	0 55 32
10 30	0 43 02	0 43 56	0 44 52	0 45 51	0 46 54	0 48 01
10 45	0 36 08	0 36 52	0 37 39	0 38 29	0 39 22	0 40 18
11 00	0 29 05	0 29 41	0 30 18	0 30 58	0 31 41	0 32 26
11 15	0 21 55	0 22 22	0 22 50	0 23 20	0 23 52	0 24 26
11 30	0 14 39	0 14 57	0 15 16	0 15 37	0 15 58	0 16 21
11 45	0 07 21	0 07 30	0 07 39	0 07 49	0 08 00	0 08 11
Elongation:						
Azimuth...	1 55 08	1 57 36	2 00 13	2 02 59	2 05 55	2 09 02
Hour angle.	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>
	5 54 07	5 53 54	5 53 41	5 53 27	5 53 12	5 52 57

*of Polaris at different hour angles—Continued.*

Azimuth of Polaris computed for declination 88° 46'.					Correction for 1' increase in declination of Polaris.		Hour angle before or after upper culmination.
Latitude 56°.	Latitude 57°.	Latitude 58°.	Latitude 59°.	Latitude 60°.	Latitude 50°.	Latitude 60°.	
° ' "	° ' "	° ' "	° ' "	° ' "	"	"	<i>h. m.</i>
0 08 56	0 09 12	0 09 28	0 09 45	0 10 03	- 6	- 8	0 15
0 17 50	0 18 20	0 18 53	0 19 27	0 20 04	-13	- 17	0 30
0 26 39	0 27 24	0 28 12	0 29 03	0 29 58	-19	- 25	0 45
0 35 21	0 36 20	0 37 23	0 38 31	0 39 44	-25	- 33	1 00
0 43 52	0 45 06	0 46 24	0 47 48	0 49 19	-32	- 41	1 15
0 52 11	0 53 39	0 55 12	0 56 52	0 58 40	-38	- 49	1 30
1 00 16	1 01 56	1 03 44	1 05 40	1 07 44	-43	- 57	1 45
1 08 03	1 09 57	1 11 58	1 14 08	1 16 28	-49	- 64	2 00
1 15 31	1 17 37	1 19 52	1 22 16	1 24 51	-54	- 71	2 15
1 22 39	1 24 56	1 27 24	1 30 01	1 32 50	-59	- 78	2 30
1 29 23	1 31 52	1 34 31	1 37 21	1 40 23	-64	- 84	2 45
1 35 43	1 38 22	1 41 12	1 44 13	1 47 28	-68	- 89	3 00
1 41 37	1 44 25	1 47 25	1 50 37	1 54 03	-72	- 94	3 15
1 47 03	1 50 00	1 53 08	1 56 30	2 00 07	-76	- 99	3 30
1 52 00	1 55 04	1 58 21	2 01 51	2 05 37	-80	-104	3 45
1 56 26	1 59 37	2 03 01	2 06 40	2 10 34	-83	-108	4 00
2 00 21	2 03 38	2 07 09	2 10 54	2 14 55	-86	-111	4 15
2 03 44	2 07 06	2 10 42	2 14 32	2 18 39	-88	-114	4 30
2 06 34	2 10 00	2 13 40	2 17 35	2 21 47	-90	-116	4 45
2 08 51	2 12 20	2 16 03	2 20 02	2 24 17	-91	-118	5 00
2 10 34	2 14 05	2 17 50	2 21 51	2 26 09	-92	-119	5 15
2 11 42	2 15 14	2 19 01	2 23 04	2 27 23	-93	-120	5 30
2 12 17	2 15 50	2 19 36	2 23 39	2 27 58	-94	-120	5 45
2 12 17	2 15 49	2 19 35	2 23 37	2 27 56	-93	-120	6 00
2 11 44	2 15 14	2 18 59	2 22 59	2 27 15	-93	-119	6 15
2 10 37	2 14 05	2 17 47	2 21 44	2 25 57	-92	-118	6 30
2 08 57	2 12 21	2 16 00	2 19 53	2 24 03	-91	-116	6 45
2 06 44	2 10 05	2 13 39	2 17 27	2 21 32	-89	-114	7 00
2 04 00	2 07 16	2 10 45	2 14 27	2 18 26	-87	-111	7 15
2 00 45	2 03 55	2 07 18	2 10 54	2 14 46	-85	-108	7 30
1 57 00	2 00 04	2 03 20	2 06 49	2 10 32	-82	-104	7 45
1 52 47	1 55 43	1 58 52	2 02 12	2 05 47	-79	-100	8 00
1 48 06	1 50 54	1 53 54	1 57 06	2 00 32	-76	- 96	8 15
1 42 58	1 45 39	1 48 30	1 51 32	1 54 47	-72	- 91	8 30
1 37 26	1 39 57	1 42 39	1 45 31	1 48 35	-68	- 86	8 45
1 31 30	1 33 51	1 36 23	1 39 05	1 41 57	-64	- 80	9 00
1 25 12	1 27 24	1 29 44	1 32 14	1 34 55	-59	- 75	9 15
1 18 34	1 20 36	1 22 45	1 25 03	1 27 30	-55	- 69	9 30
1 11 37	1 13 28	1 15 25	1 17 31	1 19 45	-50	- 63	9 45
1 04 23	1 06 03	1 07 48	1 09 41	1 11 41	-45	- 56	10 00
0 56 54	0 58 22	0 59 55	1 01 34	1 03 20	-40	- 50	10 15
0 49 12	0 50 27	0 51 48	0 53 14	0 54 45	-34	- 43	10 30
0 41 18	0 42 21	0 43 28	0 44 40	0 45 57	-29	- 36	10 45
0 33 14	0 34 05	0 34 59	0 35 57	0 36 59	-23	- 29	11 00
0 25 02	0 25 41	0 26 21	0 27 05	0 27 51	-18	- 22	11 15
0 16 45	0 17 10	0 17 38	0 18 07	0 18 38	-12	- 14	11 30
0 08 23	0 08 36	0 08 50	0 09 04	0 09 20	- 6	- 7	11 45
2 12 21	2 15 54	2 19 40	2 23 43	2 28 02	-93	-120	
<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>h. m. s.</i>	<i>s.</i>	<i>s.</i>	
5 52 41	5 52 24	5 52 06	5 51 47	5 51 27	+ 5	+ 7	

TABLE 4.—Azimuth and apparent altitude of Polaris at different hour angles—Continued.

Hour angle before or after upper culmination.	Apparent altitude of Polaris, computed for declination 88° 46' and mean refraction.												Correction for 1' increase in declination of Polaris.	Hour angle before or after upper culmination.		
	Latitude 30°.		Latitude 35°.		Latitude 40°.		Latitude 45°.		Latitude 50°.		Latitude 55°.				Latitude 60°.	
	°	'	°	'	°	'	°	'	°	'	°	'			°	'
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	'	h. m.
0 00	31	15.6	36	15.3	41	15.1	46	14.9	51	14.8	56	14.6	61	14.5	−1.0	0 00
0 15	31	15.4	36	15.2	41	14.9	46	14.8	51	14.6	56	14.4	61	14.3	−1.0	0 15
0 30	31	14.9	36	14.7	41	14.5	46	14.3	51	14.2	56	14.0	61	13.8	−1.0	0 30
0 45	31	14.2	36	13.9	41	13.7	46	13.5	51	13.3	56	13.2	61	13.0	−1.0	0 45
1 00	31	13.0	35	12.8	41	12.5	46	12.3	51	12.2	56	12.0	61	11.9	−1.0	1 00
1 15	31	11.6	36	11.3	41	11.1	46	10.9	51	10.8	56	10.6	61	10.4	−0.9	1 15
1 30	31	09.9	36	09.6	41	09.4	46	09.2	51	09.0	56	08.8	61	08.6	−0.9	1 30
1 45	31	07.9	36	07.6	41	07.3	46	07.2	51	07.0	56	06.8	61	06.6	−0.9	1 45
2 00	31	05.6	36	05.3	41	05.0	46	04.8	51	04.6	56	04.4	61	04.2	−0.8	2 00
2 15	31	03.0	36	02.7	41	02.4	46	02.2	51	02.0	56	01.8	61	01.6	−0.8	2 15
2 30	31	00.1	35	59.8	40	59.5	45	59.3	50	59.1	55	58.9	60	58.7	−0.8	2 30
2 45	30	57.0	35	56.7	40	56.5	45	56.2	50	56.0	55	55.8	60	55.5	−0.7	2 45
3 00	30	53.7	35	53.4	40	53.1	45	52.9	50	52.6	55	52.3	60	52.1	−0.7	3 00
3 15	30	50.1	35	49.8	40	49.5	45	49.2	50	49.0	55	48.8	60	48.5	−0.6	3 15
3 30	30	46.4	35	46.0	40	45.7	45	45.5	50	45.2	55	45.0	60	44.7	−0.6	3 30
3 45	30	42.4	35	42.1	40	41.8	45	41.5	50	41.3	55	41.0	60	40.7	−0.5	3 45
4 00	30	38.3	35	38.0	40	37.6	45	37.4	50	37.1	55	36.8	60	36.5	−0.5	4 00
4 15	30	34.0	35	33.6	40	33.3	45	33.0	50	32.8	55	32.5	60	32.1	−0.4	4 15
4 30	30	29.6	35	29.2	40	28.9	45	28.5	50	28.3	55	28.0	60	27.6	−0.4	4 30
4 45	30	25.0	35	24.6	40	24.3	45	24.0	50	23.7	55	23.4	60	23.0	−0.3	4 45
5 00	30	20.4	35	20.0	40	19.7	45	19.4	50	19.1	55	18.8	60	18.4	−0.2	5 00
5 15	30	15.6	35	15.3	40	14.9	45	14.6	50	14.3	55	14.0	60	13.6	−0.2	5 15
5 30	30	10.8	35	10.4	40	10.1	45	09.9	50	09.6	55	09.2	60	08.8	−0.1	5 30
5 45	30	06.0	35	05.6	40	05.3	45	05.0	50	04.7	55	04.4	60	04.0	0.0	5 45
6 00	30	01.2	35	00.8	40	00.5	45	00.2	49	59.9	54	59.5	59	59.1	0.0	6 00
6 15	29	56.4	34	56.0	39	55.6	44	55.3	49	55.0	54	54.7	59	54.3	+0.1	6 15
6 30	29	51.6	34	51.2	39	50.8	44	50.5	49	50.2	54	49.9	59	49.6	+0.1	6 30
6 45	29	46.8	34	46.4	39	46.0	44	45.7	49	45.5	54	45.1	59	44.8	+0.2	6 45
7 00	39	42.1	34	41.7	39	41.4	44	41.1	49	40.8	54	40.4	59	40.1	+0.3	7 00
7 15	29	37.5	34	37.1	39	36.8	44	36.4	49	36.2	54	35.8	59	35.4	+0.4	7 15
7 30	29	33.0	34	32.6	39	32.3	44	32.0	49	31.7	54	31.4	59	31.0	+0.4	7 30
7 45	29	28.6	34	28.2	39	27.9	44	27.6	49	27.3	54	27.0	59	26.7	+0.5	7 45
8 00	29	24.4	34	24.0	39	23.7	44	23.4	49	23.1	54	22.8	59	22.5	+0.5	8 00
8 15	29	20.3	34	19.9	39	19.6	44	19.3	49	19.0	54	18.8	59	18.4	+0.6	8 15
8 30	29	16.4	34	16.0	39	15.7	44	15.4	49	15.2	54	14.9	59	14.6	+0.6	8 30
8 45	29	12.7	34	12.3	39	12.0	44	11.7	49	11.5	54	11.2	59	11.0	+0.7	8 45
9 00	29	09.2	34	08.8	39	08.5	44	08.3	49	08.1	54	07.9	59	07.6	+0.7	9 00
9 15	29	05.9	34	05.5	39	05.3	44	05.0	49	04.8	54	04.5	59	04.3	+0.8	9 15
9 30	29	02.8	34	02.5	39	02.2	44	02.0	49	01.8	54	01.5	59	01.3	+0.8	9 30
9 45	29	00.0	33	59.7	38	59.4	43	59.2	48	59.0	53	58.8	58	58.6	+0.8	9 45
10 00	28	57.5	33	57.2	38	56.9	43	56.7	48	56.6	53	56.4	58	56.1	+0.9	10 00
10 15	28	55.3	33	55.0	38	54.7	43	54.5	48	54.3	53	54.1	58	53.9	+0.9	10 15
10 30	28	53.3	33	53.0	38	52.8	43	52.5	48	52.4	53	52.1	58	52.0	+0.9	10 30
10 45	28	51.6	33	51.3	38	51.1	43	50.8	48	50.7	53	50.5	58	50.3	+0.9	10 45
11 00	28	50.2	33	49.9	38	49.7	43	49.5	48	49.4	53	49.1	58	49.0	+1.0	11 00
11 15	28	49.2	33	48.9	38	48.6	43	48.4	48	48.2	53	48.0	58	47.9	+1.0	11 15
11 30	28	48.4	33	48.1	38	47.8	43	47.6	48	47.5	53	47.2	58	47.1	+1.0	11 30
11 45	28	47.9	33	47.6	38	47.4	43	47.1	48	47.0	53	46.8	58	46.7	+1.0	11 45
12 00	28	47.7	33	47.4	38	47.2	43	47.0	48	46.8	53	46.7	58	46.6	+1.0	12 00

TABLE 5.—*For projection of maps of large areas.*

[The ratio of the yard to the meter as stated by Clarke, namely, 1 meter = 1.093622 yards = 39.370432 inches, is that used in the table.]

## LENGTHS OF DEGREES OF THE MERIDIAN.

Latitude.	Meters. <sup>a</sup>	Statute miles.	Latitude.	Meters. <sup>a</sup>	Statute miles.
°			°		
0	110,567.2	68.704	45	111,130.9	69.054
1	110,567.6	68.704	46	111,150.6	69.066
2	110,568.6	68.705	47	111,170.4	69.079
3	110,570.3	68.706	48	111,190.1	69.091
4	110,572.7	68.708	49	111,209.7	69.103
5	110,575.8	68.710	50	111,229.3	69.115
6	110,579.5	68.712	51	111,248.7	69.127
7	110,583.9	68.715	52	111,268.0	69.139
8	110,589.0	68.718	53	111,287.1	69.151
9	110,594.7	68.721	54	111,306.0	69.163
10	110,601.1	68.725	55	111,324.8	69.175
11	110,608.1	68.730	56	111,343.3	69.186
12	110,615.8	68.734	57	111,361.5	69.197
13	110,624.1	68.739	58	111,379.5	69.209
14	110,633.0	68.744	59	111,397.2	69.220
15	110,642.5	68.751	60	111,414.5	69.230
16	110,652.6	68.757	61	111,431.5	69.241
17	110,663.3	68.764	62	111,448.2	69.251
18	110,674.5	68.771	63	111,464.4	69.261
19	110,686.3	68.778	64	111,480.3	69.271
20	110,698.7	68.786	65	111,495.7	69.281
21	110,711.6	68.794	66	111,510.7	69.290
22	110,725.0	68.802	67	111,525.3	69.299
23	110,738.8	68.811	68	111,539.3	69.308
24	110,753.2	68.820	69	111,552.9	69.316
25	110,768.0	68.829	70	111,565.9	69.324
26	110,783.3	68.839	71	111,578.4	69.332
27	110,799.0	68.848	72	111,590.4	69.340
28	110,815.1	68.858	73	111,601.8	69.347
29	110,831.6	68.869	74	111,612.7	69.354
30	110,848.5	68.879	75	111,622.9	69.360
31	110,865.7	68.890	76	111,632.6	69.366
32	110,883.2	68.901	77	111,641.6	69.372
33	110,901.1	68.912	78	111,650.0	69.377
34	110,919.2	68.923	79	111,657.8	69.382
35	110,937.6	68.935	80	111,664.9	69.386
36	110,956.2	68.946	81	111,671.4	69.390
37	110,975.1	68.958	82	111,677.2	69.394
38	110,994.1	68.969	83	111,682.4	69.397
39	111,013.3	68.981	84	111,686.9	69.400
40	111,032.7	68.993	85	111,690.7	69.402
41	111,052.2	69.006	86	111,693.8	69.404
42	111,071.7	69.018	87	111,696.2	69.405
43	111,091.4	69.030	88	111,697.9	69.407
44	111,111.1	69.042	89	111,699.0	69.407
45	111,130.9	69.054	90	111,699.3	69.407

<sup>a</sup> These quantities express the number of meters and statute miles contained within an arc of which the degree of latitude named is the middle; thus, the quantity 111,032.7, opposite latitude 40°, is the number of meters between latitude 39° 30' and latitude 40° 30'.



TABLE 5.—*For projection of maps of large areas*—Continued.

[Extracted from Appendix No. 6, U. S. Coast and Geodetic Survey Report for 1884.]

## LENGTHS OF DEGREES OF THE PARALLEL.

Latitude.	Meters.	Statute miles.	Latitude.	Meters.	Statute miles.
°			°		
0	111,321	69.172	45	78,849	48.995
1	111,304	69.162	46	77,466	48.136
2	111,253	69.130	47	76,068	47.261
3	111,169	69.078	48	74,628	46.372
4	111,051	69.005	49	73,174	45.469
5	110,900	68.911	50	71,698	44.552
6	110,715	68.795	51	70,200	43.621
7	110,497	68.660	52	68,680	42.676
8	110,245	68.504	53	67,140	41.719
9	109,959	68.326	54	65,578	40.749
10	109,641	68.129	55	63,996	39.766
11	109,289	67.910	56	62,395	38.771
12	108,904	67.670	57	60,774	37.764
13	108,486	67.410	58	59,135	36.745
14	108,036	67.131	59	57,478	35.716
15	107,553	66.830	60	55,802	34.674
16	107,036	66.510	61	54,110	33.623
17	106,487	66.169	62	52,400	32.560
18	105,906	65.808	63	50,675	31.488
19	105,294	65.427	64	48,934	30.406
20	104,649	65.026	65	47,177	29.315
21	103,972	64.606	66	45,407	28.215
22	103,264	64.166	67	43,622	27.106
23	102,524	63.706	68	41,823	25.988
24	101,754	63.228	69	40,012	24.862
25	100,952	62.729	70	38,188	23.729
26	100,119	62.212	71	36,353	22.589
27	99,257	61.676	72	34,506	21.441
28	98,364	61.122	73	32,648	20.287
29	97,441	60.548	74	30,781	19.127
30	96,488	59.956	75	28,903	17.960
31	95,506	59.345	76	27,017	16.788
32	94,495	58.716	77	25,123	15.611
33	93,455	58.071	78	23,220	14.428
34	92,387	57.407	79	21,311	13.242
35	91,290	56.725	80	19,394	12.051
36	90,166	56.027	81	17,472	10.857
37	89,014	55.311	82	15,545	9.659
38	87,835	54.579	83	13,612	8.458
39	86,629	53.829	84	11,675	7.255
40	85,396	53.063	85	9,735	6.049
41	84,137	52.281	86	7,792	4.842
42	82,853	51.483	87	5,846	3.632
43	81,543	50.669	88	3,898	2.422
44	80,208	49.840	89	1,949	1.211
45	78,849	48.995	90	0	0.000

TABLE 5.—*For projection of maps of large areas—Continued.*

[Extracted from Appendix No. 6, U. S. Coast and Geodetic Survey Report for 1884.]

## ARCS OF THE PARALLEL IN METERS.

Latitude.	Value of 1'.	Latitude.	Value of 1'.	Latitude.	Value of 1'.
°    '		°    '		°    '	
24 00	1695.9	33 00	1557.6	42 00	1380.9
10	1693.7	10	1554.7	10	1377.3
20	1691.5	20	1551.7	20	1373.7
30	1689.3	30	1548.7	30	1370.0
40	1687.0	40	1545.8	40	1366.4
50	1684.8	50	1542.8	50	1362.7
25 00	1682.5	34 00	1539.8	43 00	1359.1
10	1680.3	10	1536.8	10	1355.4
20	1678.0	20	1533.7	20	1351.7
30	1675.7	30	1530.7	30	1348.0
40	1673.3	40	1527.6	40	1344.3
50	1671.0	50	1524.6	50	1340.5
26 00	1668.7	35 00	1521.5	44 00	1336.8
10	1666.3	10	1518.4	10	1333.1
20	1663.9	20	1515.3	20	1329.3
30	1661.5	30	1512.2	30	1325.5
40	1659.1	40	1509.1	40	1321.7
50	1656.7	50	1505.9	50	1318.0
27 00	1654.3	36 00	1502.8	45 00	1314.2
10	1651.8	10	1499.6	10	1310.3
20	1649.4	20	1496.4	20	1306.5
30	1646.9	30	1493.2	30	1302.7
40	1644.4	40	1490.0	40	1298.8
50	1641.9	50	1486.8	50	1295.0
28 00	1639.4	37 00	1483.6	46 00	1291.0
10	1636.9	10	1480.3	10	1287.2
20	1634.3	20	1477.1	20	1283.3
30	1631.8	30	1473.8	30	1279.4
40	1629.2	40	1470.5	40	1275.5
50	1626.6	50	1467.2	50	1271.6
29 00	1624.0	38 00	1463.9	47 00	1267.6
10	1621.4	10	1460.6	10	1263.7
20	1618.8	20	1457.3	20	1259.7
30	1616.1	30	1453.9	30	1255.8
40	1613.5	40	1450.6	40	1251.8
50	1610.8	50	1447.2	50	1247.8
30 00	1608.1	39 00	1443.8	48 00	1243.8
10	1605.4	10	1440.4	10	1239.8
20	1602.7	20	1437.0	20	1235.8
30	1600.0	30	1433.6	30	1231.7
40	1597.3	40	1430.2	40	1227.7
50	1594.5	50	1426.7	50	1223.6
31 00	1591.8	40 00	1423.3	49 00	1219.6
10	1589.0	10	1419.8	10	1215.5
20	1586.2	20	1416.3	20	1211.4
30	1583.4	30	1412.8	30	1207.3
40	1580.6	40	1409.3	40	1203.2
50	1577.8	50	1405.8	50	1199.1
32 00	1574.9	41 00	1402.3	50 00	1195.0
10	1572.1	10	1398.8	10	1190.8
20	1569.2	20	1395.2	20	1186.7
30	1566.3	30	1391.6	30	1182.5
40	1563.4	40	1388.1	40	1178.4
50	1560.5	50	1384.5	50	1174.2

TABLE 5.—For projections of maps of large areas—Continued.

## COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 24°.			Latitude 25°.			Latitude 26°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
0 0			0 0			0 0		
1 00	101,753	361	1 00	100,951	372	1 00	100,113	383
2 00	203,500	1,445	2 00	201,896	1,439	2 00	200,231	1,532
3 00	305,237	3,250	3 00	302,831	3,551	3 00	300,332	3,447
4 00	406,959	5,778	4 00	403,749	5,957	4 00	400,416	6,128
5 00	508,660	9,028	5 00	504,645	9,307	5 00	500,476	9,574
6 00	610,336	13,001	6 00	605,514	13,401	6 00	600,506	13,786
7 00	711,981	17,695	7 00	706,349	18,239	7 00	700,501	18,763
8 00	813,590	23,109	8 00	807,145	23,821	8 00	800,456	24,505
9 00	915,159	29,245	9 00	907,899	30,146	9 00	900,364	31,011
10 00	1,016,681	36,102	10 00	1,008,608	37,215	10 00	1,000,218	38,292
11 00	1,118,152	43,679	11 00	1,109,252	45,026	11 00	1,100,015	46,316
12 00	1,219,566	51,977	12 00	1,209,841	53,578	12 00	1,199,747	55,114
13 00	1,320,919	60,994	13 00	1,310,364	62,873	13 00	1,299,409	64,675
14 00	1,422,205	70,731	14 00	1,410,815	72,909	14 00	1,398,994	74,998
15 00	1,523,420	81,186	15 00	1,511,190	83,685	15 00	1,498,496	86,082
16 00	1,624,558	92,360	16 00	1,611,483	95,202	16 00	1,597,914	97,928
17 00	1,725,614	104,251	17 00	1,711,688	107,458	17 00	1,697,237	110,584
18 00	1,826,593	116,859	18 00	1,811,800	120,453	18 00	1,796,460	123,989
19 00	1,927,490	130,184	19 00	1,911,813	134,186	19 00	1,895,578	128,033
20 00	2,028,240	144,225	20 00	2,011,722	148,656	20 00	1,994,565	132,905
21 00	2,128,918	158,981	21 00	2,111,522	163,962	21 00	2,093,475	168,544
22 00	2,229,486	174,451	22 00	2,211,207	179,905	22 00	2,192,343	184,989
23 00	2,329,946	190,634	23 00	2,310,771	196,482	23 00	2,290,982	202,089
24 00	2,430,287	207,530	24 00	2,410,210	213,894	24 00	2,389,387	219,983
25 00	2,530,505	225,153	25 00	2,509,518	232,088	25 00	2,487,753	238,650
26 00	2,630,596	243,458	26 00	2,608,689	250,914	26 00	2,585,973	258,061
27 00	2,730,554	262,487	27 00	2,707,718	270,521	27 00	2,684,042	278,222
28 00	2,830,374	282,225	28 00	2,806,600	290,859	28 00	2,781,953	299,132
29 00	2,930,052	302,671	29 00	2,905,329	311,925	29 00	2,879,702	320,788
30 00	3,029,582	323,825	30 00	3,003,900	333,718	30 00	2,977,281	343,197

TABLE 5.—For projections of maps of large areas—Continued.

## COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 27°.			Latitude 28°.			Latitude 29°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° /			° /			° /		
1 00	99,256	393	1 00	98,363	403	1 00	97,439	412
2 00	198,505	1,573	2 00	196,719	1,612	2 00	194,872	1,649
3 00	297,742	3,589	3 00	295,062	3,627	3 00	292,291	3,710
4 00	396,960	6,291	4 00	393,386	6,447	4 00	389,689	6,596
5 00	496,154	9,829	5 00	491,682	10,073	5 00	487,059	10,305
6 00	595,316	14,154	6 00	589,945	14,505	6 00	584,394	14,838
7 00	694,440	19,264	7 00	688,168	19,741	7 00	681,687	20,194
8 00	793,522	25,159	8 00	786,347	25,782	8 00	778,931	26,374
9 00	892,554	31,839	9 00	884,472	32,627	9 00	876,120	33,376
10 00	991,529	39,303	10 00	982,537	40,276	10 00	973,246	41,199
11 00	1,090,442	47,551	11 00	1,080,537	48,728	11 00	1,070,302	49,845
12 00	1,189,287	56,583	12 00	1,178,464	57,983	12 00	1,167,282	59,313
13 00	1,288,067	66,398	13 00	1,276,312	68,040	13 00	1,264,178	69,601
14 00	1,386,746	76,996	14 00	1,374,075	78,899	14 00	1,360,983	80,706
15 00	1,485,348	88,374	15 00	1,471,745	90,558	15 00	1,457,691	92,631
16 00	1,583,867	100,534	16 00	1,569,315	103,017	16 00	1,554,296	105,875
17 00	1,682,287	113,474	17 00	1,666,781	116,275	17 00	1,650,787	118,985
18 00	1,780,570	127,193	18 00	1,764,135	130,331	18 00	1,747,161	133,811
19 00	1,878,762	141,690	19 00	1,861,371	145,185	19 00	1,848,410	148,502
20 00	1,976,836	156,966	20 00	1,958,481	160,835	20 00	1,939,527	164,506
21 00	2,074,786	173,018	21 00	2,055,460	177,280	21 00	2,035,505	181,324
22 00	2,172,606	189,845	22 00	2,152,302	194,518	22 00	2,131,338	198,953
23 00	2,270,289	207,447	23 00	2,248,998	212,550	23 00	2,227,020	217,392
24 00	2,367,830	225,823	24 00	2,345,544	231,374	24 00	2,322,539	236,640
25 00	2,465,222	244,970	25 00	2,441,932	250,988	25 00	2,417,893	256,696
26 00	2,562,459	264,889	26 00	2,538,156	271,391	26 00	2,513,074	277,558
27 00	2,659,535	285,577	27 00	2,634,210	292,582	27 00	2,608,075	299,224
28 00	2,756,445	307,035	28 00	2,730,087	314,559	28 00	2,702,890	321,694
29 00	2,853,181	329,259	29 00	2,825,779	337,321	29 00	2,797,511	344,964
30 00	2,949,739	352,249	30 00	2,921,284	360,866	30 00	2,891,931	369,036

TABLE 5.—*For projections of maps of large areas—Continued.*

## COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 30°.			Latitude 31°.			Latitude 32°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° /			° /			° /		
1 00	96,487	421	1 00	96,505	429	1 00	94,494	437
2 00	192,967	1,684	2 00	191,002	1,717	2 00	188,980	1,749
3 00	289,432	3,789	3 00	286,484	3,863	3 00	283,449	3,933
4 00	385,876	6,735	4 00	381,943	6,867	4 00	377,894	6,981
5 00	482,288	10,523	5 00	477,371	10,729	5 00	472,307	10,922
6 00	578,665	15,153	6 00	572,760	15,450	6 00	566,680	15,727
7 00	674,998	20,623	7 00	668,103	21,027	7 00	661,004	21,404
8 00	771,279	26,984	8 00	763,392	27,461	8 00	755,272	27,954
9 00	867,502	34,084	9 00	858,619	34,781	9 00	849,475	35,375
10 00	963,658	42,074	10 00	953,777	42,897	10 00	943,605	43,667
11 00	1,059,741	50,906	11 00	1,048,858	51,898	11 00	1,037,655	52,829
12 00	1,155,744	60,570	12 00	1,143,854	61,753	12 00	1,131,616	62,861
13 00	1,251,656	71,074	13 00	1,238,766	72,462	13 00	1,225,480	73,761
14 00	1,347,477	82,415	14 00	1,333,561	84,024	14 00	1,319,238	85,529
15 00	1,443,198	94,591	15 00	1,428,257	95,437	15 00	1,412,885	96,164
16 00	1,538,800	107,603	16 00	1,522,837	109,701	16 00	1,506,411	111,654
17 00	1,634,290	121,449	17 00	1,617,294	123,815	17 00	1,599,808	123,029
18 00	1,729,654	136,127	18 00	1,711,621	138,777	18 00	1,693,067	141,256
19 00	1,824,887	151,637	19 00	1,806,810	154,586	19 00	1,786,182	157,346
20 00	1,919,982	167,977	20 00	1,899,852	171,241	20 00	1,879,144	174,296
21 00	2,014,930	185,147	21 00	1,993,740	188,741	21 00	1,971,946	192,105
22 00	2,109,725	203,143	22 00	2,087,468	207,065	22 00	2,064,579	210,772
23 00	2,204,369	221,966	23 00	2,181,027	225,270	23 00	2,157,085	230,295
24 00	2,298,825	241,616	24 00	2,274,411	243,295	24 00	2,249,305	250,672
25 00	2,393,116	262,069	25 00	2,367,610	267,159	25 00	2,341,385	271,901
26 00	2,487,224	283,383	26 00	2,460,618	288,860	26 00	2,433,264	293,981
27 00	2,581,144	305,498	27 00	2,553,427	311,396	27 00	2,524,935	316,910
28 00	2,674,867	328,432	28 00	2,646,029	334,765	28 00	2,616,390	340,686
29 00	2,768,385	352,183	29 00	2,738,418	358,966	29 00	2,707,621	365,307
30 00	2,861,694	376,749	30 00	2,830,565	383,997	30 00	2,798,621	390,770

TABLE 5.—For projections of maps of large areas—Continued.

## COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 33°.			Latitude 34°.			Latitude 35°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
0 00	93, 454	444	1 00	92, 385	451	1 00	91, 289	457
1 00	180, 809	1, 577	2 00	184, 762	1, 803	2 00	182, 568	1, 828
2 00	280, 328	3, 997	3 00	277, 121	4, 057	3 00	273, 830	4, 112
3 00	373, 731	7, 106	4 00	369, 454	7, 212	4 00	365, 064	7, 310
5 00	467, 100	11, 402	5 00	461, 751	11, 268	5 00	456, 261	11, 421
6 00	560, 428	15, 986	6 00	554, 004	16, 225	6 00	547, 412	16, 446
7 00	653, 704	21, 757	7 00	646, 205	22, 082	7 00	638, 508	22, 381
8 00	746, 922	28, 414	8 00	738, 344	28, 839	8 00	729, 542	29, 229
9 00	840, 072	35, 957	9 00	830, 413	36, 494	9 00	820, 501	36, 987
10 00	933, 146	44, 285	10 00	922, 403	45, 048	10 00	911, 379	45, 656
11 00	1, 026, 136	53, 697	11 00	1, 014, 305	54, 499	11 00	1, 002, 165	55, 234
12 00	1, 119, 033	63, 593	12 00	1, 106, 110	64, 846	12 00	1, 092, 850	65, 721
13 00	1, 211, 829	74, 971	13 00	1, 197, 809	76, 089	13 00	1, 183, 426	77, 115
14 00	1, 304, 515	86, 931	14 00	1, 289, 395	88, 227	14 00	1, 273, 884	89, 415
15 00	1, 397, 083	99, 771	15 00	1, 380, 858	101, 258	15 00	1, 364, 214	102, 619
16 00	1, 489, 520	113, 491	16 00	1, 472, 190	115, 180	16 00	1, 454, 407	116, 728
17 00	1, 581, 834	128, 089	17 00	1, 563, 381	129, 993	17 00	1, 544, 454	131, 738
18 00	1, 673, 998	143, 564	18 00	1, 654, 423	145, 696	18 00	1, 634, 347	147, 660
19 00	1, 766, 011	159, 914	19 00	1, 745, 308	162, 287	19 00	1, 724, 076	164, 460
20 00	1, 857, 860	177, 138	20 00	1, 836, 026	179, 763	20 00	1, 813, 632	182, 168
21 00	1, 949, 533	195, 234	21 00	1, 926, 569	198, 124	21 00	1, 903, 006	200, 772
22 00	2, 041, 062	213, 291	22 00	2, 016, 929	217, 368	22 00	1, 992, 190	220, 268
23 00	2, 132, 387	231, 037	23 00	2, 107, 097	237, 493	23 00	2, 081, 174	240, 657
24 00	2, 223, 521	254, 740	24 00	2, 197, 065	258, 497	24 00	2, 169, 949	261, 936
25 00	2, 314, 453	279, 309	25 00	2, 286, 823	280, 378	25 00	2, 258, 507	284, 102
26 00	2, 405, 175	298, 741	26 00	2, 376, 363	303, 134	26 00	2, 346, 838	307, 154
27 00	2, 495, 680	322, 033	27 00	2, 465, 677	326, 763	27 00	2, 434, 934	331, 089
28 00	2, 585, 961	346, 187	28 00	2, 554, 766	351, 362	28 00	2, 522, 787	355, 905
29 00	2, 676, 007	371, 197	29 00	2, 643, 691	376, 629	29 00	2, 610, 386	381, 598
30 00	2, 765, 812	397, 061	30 00	2, 732, 175	402, 869	30 00	2, 697, 724	408, 168

TABLE 5.—For projections of maps of large areas—Continued.

## COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y meters.								
Latitude 36°.			Latitude 37°.			Latitude 38°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
0 /			0 /			0 /		
1 00	90, 164	462	1 00	89, 012	467	1 00	87, 883	472
2 00	180, 319	1, 850	2 00	178, 015	1, 879	2 00	176, 656	1, 886
3 00	270, 455	4, 162	3 00	266, 997	4, 207	3 00	263, 458	4, 247
4 00	360, 562	7, 399	4 00	355, 951	7, 479	4 00	351, 280	7, 549
5 00	450, 631	11, 560	5 00	444, 865	11, 685	5 00	438, 922	11, 795
6 00	540, 653	16, 645	6 00	533, 730	16, 824	6 00	526, 643	16, 933
7 00	630, 618	22, 652	7 00	622, 536	22, 896	7 00	614, 263	22, 112
8 00	720, 517	29, 583	8 00	711, 273	29, 901	8 00	701, 612	30, 133
9 00	810, 340	37, 435	9 00	799, 982	37, 838	9 00	789, 280	38, 195
10 00	900, 078	46, 209	10 00	888, 503	46, 706	10 00	876, 657	47, 145
11 00	989, 720	55, 903	11 00	976, 975	56, 508	11 00	963, 933	57, 024
12 00	1, 079, 259	66, 515	12 00	1, 065, 340	67, 229	12 00	1, 051, 086	67, 880
13 00	1, 168, 684	78, 046	13 00	1, 153, 567	78, 832	13 00	1, 138, 141	79, 622
14 00	1, 257, 987	90, 494	14 00	1, 241, 707	91, 462	14 00	1, 226, 053	92, 319
15 00	1, 347, 156	103, 856	15 00	1, 329, 690	104, 967	15 00	1, 311, 823	105, 949
16 00	1, 436, 184	118, 133	16 00	1, 417, 528	119, 395	16 00	1, 396, 441	120, 511
17 00	1, 525, 061	133, 328	17 00	1, 505, 206	134, 745	17 00	1, 484, 899	136, 002
18 00	1, 613, 777	149, 423	18 00	1, 592, 721	151, 015	18 00	1, 571, 185	152, 421
19 00	1, 702, 324	166, 433	19 00	1, 680, 059	163, 203	19 00	1, 657, 289	169, 767
20 00	1, 790, 691	184, 350	20 00	1, 767, 211	186, 307	20 00	1, 743, 202	188, 087
21 00	1, 878, 870	203, 173	21 00	1, 854, 169	205, 326	21 00	1, 826, 914	207, 229
22 00	1, 966, 851	222, 899	22 00	1, 940, 922	225, 256	22 00	1, 914, 415	227, 341
23 00	2, 054, 625	243, 527	23 00	2, 027, 462	246, 099	23 00	1, 999, 694	248, 370
24 00	2, 142, 183	265, 055	24 00	2, 113, 777	267, 849	24 00	2, 084, 743	270, 315
25 00	2, 229, 516	287, 479	25 00	2, 199, 860	290, 503	25 00	2, 169, 551	293, 172
26 00	2, 316, 613	310, 798	26 00	2, 285, 699	314, 061	26 00	2, 254, 109	316, 989
27 00	2, 403, 467	335, 009	27 00	2, 371, 287	338, 519	27 00	2, 338, 406	341, 613
28 00	2, 490, 068	360, 111	28 00	2, 456, 612	363, 874	28 00	2, 422, 483	367, 192
29 00	2, 576, 407	386, 099	29 00	2, 541, 067	390, 125	29 00	2, 506, 181	393, 672
30 00	2, 662, 475	412, 971	30 00	2, 626, 441	417, 267	30 00	2, 589, 639	421, 050

TABLE 5.—For projections of maps of large areas—Continued.

## COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 39°.			Latitude 40°.			Latitude 41°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
0 0			0 0			0 0		
1 00	86,627	476	1 00	85,394	479	1 00	84,136	482
2 00	173,243	1,908	2 00	170,778	1,916	2 00	168,260	1,927
3 00	259,859	4,281	3 00	256,140	4,311	3 00	252,863	4,336
4 00	346,408	7,611	4 00	341,470	7,663	4 00	336,482	7,706
5 00	432,925	11,991	5 00	426,757	11,972	5 00	420,457	12,039
6 00	519,396	17,121	6 00	511,990	17,238	6 00	504,428	17,336
7 00	605,808	23,900	7 00	597,158	23,460	7 00	588,832	23,591
8 00	692,138	30,428	8 00	682,252	30,637	8 00	672,159	30,807
9 00	778,388	38,504	9 00	767,260	38,768	9 00	755,997	38,963
10 00	864,545	47,527	10 00	852,171	47,852	10 00	839,587	48,118
11 00	950,596	57,496	11 00	936,975	57,888	11 00	923,067	58,209
12 00	1,036,536	68,409	12 00	1,021,661	68,875	12 00	1,006,475	69,256
13 00	1,122,349	80,266	13 00	1,106,218	80,811	13 00	1,089,752	81,266
14 00	1,208,027	93,064	14 00	1,190,636	93,696	14 00	1,172,886	94,212
15 00	1,293,559	106,802	15 00	1,274,904	107,525	15 00	1,255,866	108,117
16 00	1,378,934	121,479	16 00	1,359,012	122,300	16 00	1,338,681	122,971
17 00	1,464,144	137,093	17 00	1,442,949	138,017	17 00	1,421,321	138,778
18 00	1,549,177	153,642	18 00	1,525,704	154,675	18 00	1,503,775	155,520
19 00	1,634,023	171,124	19 00	1,610,267	172,272	19 00	1,586,031	173,210
20 00	1,718,671	189,537	20 00	1,693,628	190,805	20 00	1,668,079	191,841
21 00	1,803,113	208,878	21 00	1,776,775	210,272	21 00	1,749,909	211,409
22 00	1,887,337	229,146	22 00	1,859,698	230,671	22 00	1,831,509	231,914
23 00	1,971,333	250,337	23 00	1,942,387	251,996	23 00	1,912,969	253,352
24 00	2,055,091	272,450	24 00	2,024,833	274,252	24 00	1,993,978	275,719
25 00	2,138,602	295,481	25 00	2,107,023	297,430	25 00	2,074,826	299,014
26 00	2,221,854	319,429	26 00	2,189,948	321,528	26 00	2,155,402	323,238
27 00	2,304,838	344,289	27 00	2,270,597	346,543	27 00	2,235,696	348,974
28 00	2,387,545	370,059	28 00	2,351,961	372,473	28 00	2,315,696	374,432
29 00	2,469,963	396,736	29 00	2,433,029	399,314	29 00	2,395,392	401,404
30 00	2,552,084	424,317	30 00	2,513,790	427,063	30 00	2,474,774	429,287



TABLE 5.—For projections of maps of large areas—Continued.

## COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 42°.			Latitude 48°.			Latitude 44°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
0 /			0 /			0 /		
1 00	82,851	484	1 00	81,541	485	1 00	80,206	486
2 00	165,691	1,985	2 00	163,071	1,941	2 00	160,401	1,945
3 00	248,508	4,854	3 00	244,578	4,367	3 00	240,572	4,375
4 00	331,292	7,739	4 00	326,050	7,763	4 00	320,708	7,778
5 00	414,030	12,092	5 00	407,476	12,129	5 00	400,797	12,152
6 00	496,712	17,410	6 00	488,844	17,464	6 00	480,827	17,496
7 00	579,325	23,693	7 00	570,143	23,766	7 00	560,786	23,811
8 00	661,861	30,941	8 00	651,361	31,036	8 00	640,682	31,094
9 00	744,305	39,152	9 00	732,486	39,272	9 00	720,445	39,345
10 00	826,648	48,325	10 00	813,508	48,474	10 00	800,122	48,533
11 00	908,879	58,459	11 00	894,415	58,639	11 00	879,681	58,746
12 00	990,985	69,553	12 00	975,195	69,766	12 00	960,110	69,893
13 00	1,072,966	81,605	13 00	1,056,837	81,854	13 00	1,040,339	82,002
14 00	1,154,781	94,614	14 00	1,136,329	94,901	14 00	1,117,885	95,072
15 00	1,236,449	108,577	15 00	1,216,661	108,906	15 00	1,196,207	109,100
16 00	1,317,948	123,493	16 00	1,296,820	123,864	16 00	1,275,323	124,084
17 00	1,399,267	139,360	17 00	1,376,795	139,777	17 00	1,353,911	139,928
18 00	1,480,395	156,175	18 00	1,456,575	156,640	18 00	1,432,380	156,813
19 00	1,561,321	173,937	19 00	1,536,148	174,451	19 00	1,510,519	174,753
20 00	1,642,035	192,642	20 00	1,615,506	193,209	20 00	1,593,496	193,640
21 00	1,722,524	212,289	21 00	1,694,682	212,909	21 00	1,672,240	213,270
22 00	1,802,779	232,874	22 00	1,773,519	233,551	22 00	1,750,788	233,932
23 00	1,882,798	254,396	23 00	1,852,155	255,129	23 00	1,829,140	255,532
24 00	1,962,540	276,850	24 00	1,930,528	277,642	24 00	1,907,965	278,096
25 00	2,042,024	300,234	25 00	2,008,628	301,087	25 00	1,984,650	301,572
26 00	2,121,230	324,544	26 00	2,086,443	325,459	26 00	2,061,055	325,977
27 00	2,200,146	349,778	27 00	2,163,963	350,750	27 00	2,137,189	351,306
28 00	2,278,762	375,932	28 00	2,241,176	376,974	28 00	2,212,950	377,555
29 00	2,357,067	403,002	29 00	2,318,071	404,109	29 00	2,278,417	404,722
30 00	2,435,052	430,985	30 00	2,394,639	432,157	30 00	2,353,550	433,801

TABLE 5.—For projections of maps of large areas—Continued.

## COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 45°.			Latitude 46°.			Latitude 47°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° ' /			° ' /			° ' /		
1 00	78,847	486	1 00	77,464	486	1 00	76,066	485
2 00	157,682	1,946	2 00	154,915	1,945	2 00	152,100	1,942
3 00	236,498	4,378	3 00	232,842	4,376	3 00	228,119	4,368
4 00	315,269	7,788	4 00	309,732	7,779	4 00	304,101	7,765
5 00	393,996	12,160	5 00	387,074	12,153	5 00	380,034	12,131
6 00	472,663	17,508	6 00	464,354	17,498	6 00	455,904	17,467
7 00	551,258	23,826	7 00	541,662	23,813	7 00	531,700	23,770
8 00	629,769	31,114	8 00	618,684	31,096	8 00	607,410	31,040
9 00	708,184	39,370	9 00	696,708	39,347	9 00	683,020	39,276
10 00	786,492	48,594	10 00	772,623	48,565	10 00	758,520	48,477
11 00	864,679	58,782	11 00	849,416	58,747	11 00	833,895	58,640
12 00	942,735	69,936	12 00	926,075	69,893	12 00	909,135	69,765
13 00	1,020,647	82,051	13 00	1,002,588	82,000	13 00	984,227	81,849
14 00	1,098,404	95,127	14 00	1,078,943	95,067	14 00	1,059,158	94,890
15 00	1,175,994	109,162	15 00	1,155,128	109,091	15 00	1,133,917	108,887
16 00	1,253,404	124,153	16 00	1,231,131	124,071	16 00	1,208,491	123,837
17 00	1,330,624	140,099	17 00	1,306,940	140,003	17 00	1,282,868	139,738
18 00	1,407,640	156,996	18 00	1,382,543	156,887	18 00	1,357,036	156,587
19 00	1,484,443	174,842	19 00	1,457,928	174,718	19 00	1,430,964	174,381
20 00	1,561,019	193,635	20 00	1,533,063	193,494	20 00	1,504,697	193,118
21 00	1,637,358	213,371	21 00	1,607,997	213,212	21 00	1,578,166	212,793
22 00	1,713,447	234,048	22 00	1,682,657	233,869	22 00	1,651,377	233,405
23 00	1,789,276	255,663	23 00	1,757,052	255,462	23 00	1,724,320	254,950
24 00	1,864,831	278,211	24 00	1,831,170	277,967	24 00	1,796,982	277,425
25 00	1,940,103	301,690	25 00	1,904,999	301,441	25 00	1,869,851	300,824
26 00	2,015,079	325,097	26 00	1,978,528	325,820	26 00	1,941,415	325,146
27 00	2,089,749	351,427	27 00	2,051,745	351,120	27 00	2,013,168	350,386
28 00	2,164,100	377,676	28 00	2,124,639	377,837	28 00	2,084,583	376,539
29 00	2,238,121	404,841	29 00	2,197,197	404,468	29 00	2,155,668	403,602
30 00	2,311,802	432,918	30 00	2,269,410	432,507	30 00	2,226,392	431,569

TABLE 5.—For projections of maps of large areas—Continued.

## COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 48°.			Latitude 49°.			Latitude 50°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° /			° /			° /		
1 00	74, 626	484	1 00	73, 172	482	1 00	71, 696	479
2 00	149, 239	1, 936	2 00	146, 381	1, 928	2 00	143, 379	1, 917
3 00	223, 827	4, 355	3 00	219, 465	4, 337	3 00	215, 087	4, 313
4 00	298, 377	7, 742	4 00	292, 561	7, 709	4 00	286, 656	7, 667
5 00	372, 877	12, 095	5 00	365, 606	12, 044	5 00	358, 224	11, 978
6 00	447, 314	17, 414	6 00	438, 588	17, 340	6 00	429, 727	17, 246
7 00	521, 677	23, 698	7 00	511, 493	23, 598	7 00	501, 154	23, 469
8 00	595, 951	30, 946	8 00	584, 310	30, 815	8 00	572, 492	30, 646
9 00	670, 125	39, 157	9 00	657, 026	38, 991	9 00	643, 727	38, 777
10 00	744, 186	48, 329	10 00	729, 627	48, 123	10 00	714, 847	47, 859
11 00	818, 123	58, 461	11 00	802, 102	58, 212	11 00	785, 839	57, 891
12 00	891, 921	69, 552	12 00	874, 438	69, 254	12 00	856, 691	68, 872
13 00	965, 570	81, 598	13 00	946, 622	81, 248	13 00	927, 389	80, 798
14 00	1, 089, 056	94, 598	14 00	1, 018, 642	94, 191	14 00	997, 922	98, 699
15 00	1, 112, 367	108, 551	15 00	1, 090, 485	108, 082	15 00	1, 068, 277	107, 482
16 00	1, 185, 491	123, 453	16 00	1, 162, 138	122, 918	16 00	1, 138, 440	122, 234
17 00	1, 258, 416	139, 302	17 00	1, 233, 591	138, 697	17 00	1, 208, 400	137, 923
18 00	1, 331, 129	156, 096	18 00	1, 304, 829	155, 416	18 00	1, 278, 144	154, 546
19 00	1, 403, 618	173, 832	19 00	1, 375, 840	173, 071	19 00	1, 347, 660	172, 099
20 00	1, 475, 871	192, 506	20 00	1, 446, 613	191, 660	20 00	1, 416, 934	190, 561
21 00	1, 547, 876	212, 116	21 00	1, 517, 135	211, 180	21 00	1, 485, 956	209, 967
22 00	1, 619, 620	232, 658	22 00	1, 587, 394	231, 627	22 00	1, 554, 711	230, 314
23 00	1, 691, 091	254, 128	23 00	1, 657, 378	252, 998	23 00	1, 623, 189	251, 559
24 00	1, 762, 279	276, 524	24 00	1, 727, 073	275, 288	24 00	1, 691, 877	273, 717
25 00	1, 833, 170	299, 842	25 00	1, 796, 470	298, 495	25 00	1, 759, 262	296, 785
26 00	1, 903, 752	324, 077	26 00	1, 865, 554	322, 614	26 00	1, 826, 838	320, 758
27 00	1, 974, 015	349, 225	27 00	1, 934, 315	347, 640	27 00	1, 894, 077	345, 633
28 00	2, 043, 945	375, 283	28 00	2, 002, 740	373, 570	28 00	1, 960, 983	371, 404
29 00	2, 113, 531	402, 245	29 00	2, 070, 817	400, 399	29 00	2, 027, 538	398, 068
30 00	2, 182, 762	430, 107	30 00	2, 138, 536	428, 123	30 00	2, 093, 731	425, 619

TABLE 6.—Coordinates for projection of maps (scale 1:15000).

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	0°	1°
0 00	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
0 10	5.804	2.922	5.844	8.765	11.687	14.609	17.531			
0 20	11.608	2.922	5.843	8.765	11.687	14.608	17.530			
0 30	17.412	2.922	5.843	8.765	11.686	14.608	17.530			
0 40	23.216	2.922	5.843	8.764	11.686	14.608	17.529			
0 50	29.020	2.921	5.843	8.764	11.686	14.607	17.528			
1 00	-----	2.921	5.843	8.764	11.685	14.606	17.528	5	0.000	0.000
1 10	5.840	2.921	5.842	8.763	11.684	14.606	17.527	10	.000	.000
1 20	11.608	2.921	5.842	8.763	11.684	14.604	17.525	15	.000	.000
1 30	17.412	2.921	5.841	8.762	11.683	14.604	17.524	20	.000	.001
1 40	23.216	2.920	5.841	8.761	11.682	14.602	17.522	25	.000	.001
1 50	29.020	2.920	5.840	8.761	11.681	14.601	17.521	30	.000	.001
2 00	-----	2.920	5.840	8.760	11.680	14.600	17.520		2°	3°
2 10	5.804	2.920	5.839	8.759	11.678	14.598	17.518			
2 20	11.608	2.919	5.839	8.758	11.677	14.596	17.516			
2 30	17.412	2.919	5.838	8.757	11.676	14.594	17.513			
2 40	23.216	2.918	5.837	8.756	11.674	14.592	17.511	5	0.000	0.000
2 50	29.020	2.918	5.836	8.755	11.673	14.591	17.509	10	.000	.000
3 00	-----	2.918	5.836	8.753	11.671	14.589	17.507	15	.001	.001
3 10	5.804	2.917	5.835	8.752	11.669	14.586	17.504	20	.001	.002
3 20	11.608	2.917	5.834	8.750	11.667	14.584	17.501	25	.002	.003
3 30	17.413	2.916	5.832	8.749	11.665	14.581	17.497	30	.003	.004
3 40	23.217	2.916	5.831	8.747	11.663	14.578	17.494		4°	5°
3 50	29.021	2.915	5.830	8.746	11.661	14.576	17.491			
4 00	-----	2.915	5.829	8.744	11.659	14.574	17.488			
4 10	5.804	2.914	5.828	8.742	11.656	14.570	17.484	5	0.000	0.000
4 20	11.609	2.913	5.827	8.740	11.654	14.567	17.480	10	.001	.001
4 30	17.413	2.913	5.825	8.738	11.651	14.564	17.476	15	.001	.002
4 40	23.217	2.912	5.824	8.736	11.648	14.560	17.473	20	.002	.003
4 50	29.022	2.911	5.823	8.734	11.646	14.557	17.468	25	.004	.005
5 00	-----	2.911	5.822	8.732	11.643	14.554	17.465	30	.005	.007
5 10	5.804	2.910	5.820	8.730	11.640	14.550	17.459		6°	7°
5 20	11.609	2.909	5.818	8.727	11.636	14.546	17.455			
5 30	17.414	2.908	5.817	8.725	11.633	14.542	17.450			
5 40	23.218	2.908	5.815	8.722	11.630	14.538	17.445			
5 50	29.022	2.907	5.813	8.720	11.627	14.534	17.440			
6 00	-----	2.906	5.812	8.718	11.624	14.530	17.435	5	0.000	0.000
6 10	5.805	2.905	5.810	8.715	11.620	14.524	17.429	10	.001	.001
6 20	11.609	2.904	5.808	8.712	11.616	14.520	17.424	15	.002	.002
6 30	17.414	2.903	5.806	8.709	11.612	14.515	17.418	20	.004	.004
6 40	23.219	2.902	5.804	8.706	11.608	14.510	17.413	25	.006	.006
6 50	29.024	2.901	5.802	8.703	11.604	14.506	17.407	30	.008	.009
7 00	-----	2.900	5.800	8.701	11.601	14.501	17.401		8°	
7 10	5.805	2.899	5.798	8.697	11.596	14.496	17.395			
7 20	11.610	2.898	5.796	8.694	11.592	14.490	17.387	5	0.000	
7 30	17.415	2.897	5.794	8.690	11.587	14.484	17.381	10	.001	
7 40	23.220	2.896	5.791	8.687	11.583	14.478	17.374	15	.003	
7 50	29.025	2.895	5.789	8.684	11.578	14.473	17.368	20	.005	
8 00	-----	2.894	5.787	8.680	11.574	14.468	17.361	25	.007	
								30	.010	

TABLE 6.—*Coordinates for projection of maps (scale 1:250,000)*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
° ' "	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	8°	9°
8 00	.....	2,894	5,787	8,680	11,574	14,468	17,361			
10	5,806	2,892	5,784	8,677	11,569	14,461	17,353			
20	11,610	2,891	5,782	8,673	11,564	14,455	17,346			
30	17,416	2,890	5,779	8,669	11,559	14,448	17,338			
40	23,221	2,888	5,777	8,666	11,554	14,442	17,331			
50	29,026	2,887	5,775	8,662	11,549	14,436	17,324			
9 00	.....	2,886	5,772	8,658	11,544	14,430	17,317			
10	5,806	2,885	5,769	8,654	11,539	14,424	17,308			
20	11,611	2,883	5,767	8,650	11,533	14,416	17,300			
30	17,417	2,882	5,764	8,646	11,528	14,410	17,291			
40	23,222	2,881	5,761	8,642	11,522	14,402	17,283			
50	29,028	2,879	5,758	8,637	11,516	14,396	17,275			
10 00	.....	2,878	5,755	8,633	11,511	14,388	17,266			
10	5,806	2,876	5,752	8,628	11,504	14,380	17,257			
20	11,612	2,875	5,749	8,624	11,498	14,373	17,248			
30	17,417	2,873	5,746	8,619	11,492	14,366	17,239			
40	23,223	2,872	5,743	8,614	11,486	14,358	17,229			
50	29,029	2,870	5,740	8,610	11,480	14,350	17,220			
11 00	.....	2,869	5,737	8,606	11,474	14,342	17,211			
10	5,806	2,867	5,734	8,601	11,468	14,334	17,201			
20	11,612	2,866	5,730	8,596	11,461	14,326	17,191			
30	17,419	2,864	5,727	8,590	11,454	14,318	17,181			
40	23,225	2,862	5,724	8,585	11,447	14,309	17,171			
50	29,031	2,860	5,720	8,580	11,440	14,300	17,161			
12 00	.....	2,858	5,717	8,575	11,434	14,292	17,150			
10	5,807	2,857	5,713	8,570	11,426	14,282	17,139			
20	11,613	2,856	5,709	8,564	11,419	14,274	17,128			
30	17,420	2,853	5,706	8,559	11,412	14,264	17,117			
40	23,226	2,851	5,702	8,553	11,404	14,256	17,107			
50	29,033	2,849	5,698	8,548	11,397	14,246	17,095			
13 00	.....	2,847	5,695	8,542	11,390	14,237	17,084			
10	5,807	2,846	5,691	8,536	11,382	14,228	17,073			
20	11,614	2,844	5,687	8,530	11,374	14,218	17,061			
30	17,421	2,842	5,683	8,524	11,366	14,208	17,049			
40	23,228	2,840	5,679	8,519	11,358	14,198	17,038			
50	29,035	2,838	5,675	8,513	11,350	14,188	17,026			
14 00	.....	2,836	5,671	8,507	11,342	14,178	17,014			
10	5,808	2,834	5,667	8,500	11,334	14,168	17,001			
20	11,615	2,831	5,663	8,494	11,326	14,157	16,988			
30	17,422	2,829	5,658	8,488	11,317	14,146	16,975			
40	23,230	2,827	5,654	8,481	11,308	14,136	16,963			
50	29,038	2,825	5,650	8,475	11,300	14,125	16,950			
15 00	.....	2,823	5,646	8,469	11,292	14,114	16,937			
10	5,808	2,821	5,641	8,462	11,282	14,103	16,924			
20	11,616	2,818	5,637	8,455	11,274	14,092	16,910			
30	17,424	2,816	5,632	8,448	11,264	14,080	16,897			
40	23,232	2,814	5,628	8,441	11,255	14,069	16,883			
50	29,040	2,812	5,623	8,435	11,246	14,058	16,870			
16 00	.....	2,809	5,619	8,428	11,237	14,046	16,856			

TABLE 6.—*Coordinates for projection of maps (scale 1:155,000)*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	16°	17°
16 00	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
10	5.809	2.809	5.619	8.428	11.237	14.046	16.856			
20	11.617	2.807	5.614	8.421	11.228	14.034	16.841			
30	17.426	2.804	5.609	8.414	11.218	14.022	16.827			
40	23.234	2.802	5.604	8.406	11.208	14.010	16.813			
50	29.043	2.800	5.599	8.399	11.199	13.998	16.798			
		2.797	5.595	8.392	11.189	13.986	16.784			
17 00		2.795	5.590	8.385	11.180	13.974	16.769			
10	5.809	2.792	5.585	8.377	11.170	13.962	16.754	5	0.001	0.001
20	11.618	2.790	5.580	8.369	11.159	13.949	16.739	10	.002	.002
30	17.427	2.787	5.575	8.362	11.149	13.936	16.724	15	.005	.005
40	23.236	2.785	5.570	8.354	11.139	13.924	16.709	20	.009	.010
50	29.046	2.782	5.564	8.347	11.129	13.911	16.693	25	.014	.015
								30	.020	.021
18 00		2.780	5.559	8.339	11.119	13.898	16.678			
10	5.810	2.777	5.554	8.331	11.108	13.885	16.662		18°	19°
20	11.619	2.774	5.549	8.323	11.097	13.872	16.646			
30	17.429	2.772	5.543	8.315	11.087	13.859	16.630			
40	23.239	2.769	5.538	8.307	11.076	13.845	16.614			
50	29.049	2.766	5.533	8.299	11.065	13.832	16.598	5	0.001	0.001
								10	.002	.003
19 00		2.764	5.527	8.291	11.054	13.818	16.582	15	.006	.006
10	5.810	2.761	5.522	8.282	11.043	13.804	16.565	20	.010	.010
20	11.621	2.758	5.516	8.274	11.032	13.790	16.548	25	.016	.016
30	17.431	2.755	5.510	8.266	11.021	13.776	16.531	30	.022	.024
40	23.242	2.752	5.505	8.257	11.009	13.762	16.514			
50	29.052	2.750	5.499	8.249	10.998	13.748	16.497		20°	21°
20 00		2.747	5.493	8.240	10.987	13.734	16.480			
10	5.811	2.743	5.487	8.231	10.975	13.719	16.462	5	0.001	0.001
20	11.622	2.741	5.482	8.222	10.963	13.704	16.445	10	.003	.003
30	17.433	2.738	5.476	8.213	10.951	13.689	16.427	15	.006	.006
40	23.244	2.735	5.470	8.204	10.939	13.674	16.409	20	.011	.011
50	29.055	2.732	5.464	8.196	10.928	13.660	16.391	25	.017	.018
								30	.025	.026
21 00		2.729	5.458	8.187	10.916	13.645	16.373			
10	5.812	2.726	5.452	8.177	10.903	13.629	16.355			
20	11.623	2.723	5.445	8.168	10.891	13.614	16.336		22°	23°
30	17.435	2.720	5.439	8.159	10.878	13.598	16.318			
40	23.247	2.717	5.433	8.150	10.866	13.583	16.300			
50	29.058	2.714	5.427	8.141	10.854	13.568	16.281	5	0.001	0.001
								10	.003	.003
22 00		2.710	5.421	8.131	10.842	13.552	16.262	15	.007	.007
10	5.812	2.707	5.414	8.122	10.829	13.536	16.243	20	.012	.012
20	11.625	2.704	5.408	8.112	10.816	13.520	16.223	25	.018	.019
30	17.437	2.701	5.401	8.102	10.802	13.503	16.204	30	.027	.028
40	23.250	2.697	5.395	8.092	10.790	13.487	16.184			
50	29.062	2.694	5.388	8.083	10.777	13.471	16.165			
									24°	
23 00		2.691	5.382	8.073	10.764	13.455	16.145			
10	5.813	2.688	5.375	8.063	10.750	13.438	16.125			
20	11.626	2.684	5.368	8.053	10.737	13.421	16.105	5	0.001	
30	17.439	2.681	5.362	8.042	10.723	13.404	16.085	10	.003	
40	23.252	2.677	5.355	8.032	10.710	13.387	16.064	15	.007	
50	29.066	2.674	5.348	8.022	10.696	13.371	16.045	20	.013	
								25	.020	
24 00		2.671	5.341	8.012	10.683	13.354	16.024	30	.028	

TABLE 6.—*Coordinates for projection of maps (scale 1:110000)*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
° ' "	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	24°	25°
24 00	.....	2.671	5.341	8.012	10.683	13.354	16.024			
10	5.814	2.667	5.334	8.002	10.669	13.336	16.003			
20	11.628	2.664	5.327	7.991	10.655	13.319	15.982			
30	17.442	2.660	5.320	7.981	10.641	13.301	15.961			
40	23.256	2.657	5.313	7.970	10.627	13.284	15.940			
50	29.069	2.653	5.306	7.960	10.613	13.266	15.919			
25 00	.....	2.650	5.299	7.949	10.599	13.249	15.898	5	0.001	0.001
10	5.815	2.646	5.292	7.938	10.584	13.231	15.877	10	.003	.003
20	11.629	2.642	5.285	7.927	10.570	13.212	15.854	15	.007	.007
30	17.444	2.639	5.278	7.916	10.555	13.194	15.833	20	.013	.013
40	23.259	2.635	5.270	7.905	10.540	13.176	15.811	25	.020	.020
50	29.074	2.631	5.263	7.894	10.526	13.157	15.788	30	.028	.029
26 00	.....	2.628	5.256	7.883	10.511	13.139	15.767		26°	27°
10	5.816	2.624	5.248	7.872	10.496	13.120	15.744			
20	11.631	2.620	5.240	7.861	10.481	13.101	15.721			
30	17.446	2.616	5.233	7.849	10.466	13.082	15.698			
40	23.262	2.613	5.225	7.838	10.451	13.063	15.676			
50	29.077	2.609	5.218	7.827	10.436	13.045	15.654	5	0.001	0.001
27 00	.....	2.605	5.210	7.816	10.421	13.026	15.631	10	.003	.003
10	5.816	2.601	5.203	7.804	10.405	13.006	15.608	15	.008	.008
20	11.633	2.597	5.195	7.792	10.390	12.987	15.584	20	.013	.014
30	17.449	2.593	5.187	7.780	10.374	12.967	15.560	25	.021	.022
40	23.265	2.589	5.179	7.768	10.358	12.947	15.537	30	.030	.031
50	29.082	2.586	5.171	7.757	10.342	12.928	15.514		28°	29°
28 00	.....	2.582	5.163	7.745	10.327	12.909	15.490			
10	5.817	2.578	5.155	7.733	10.311	12.889	15.466	5	0.001	0.001
20	11.634	2.574	5.147	7.721	10.294	12.868	15.442	10	.004	.004
30	17.451	2.570	5.139	7.709	10.278	12.848	15.418	15	.008	.008
40	23.268	2.566	5.131	7.697	10.262	12.828	15.394	20	.014	.014
50	29.086	2.562	5.123	7.685	10.246	12.808	15.369	25	.022	.023
29 00	.....	2.558	5.115	7.673	10.230	12.788	15.345	30	.032	.032
10	5.818	2.553	5.107	7.660	10.213	12.767	15.320		30°	31°
20	11.636	2.549	5.098	7.648	10.197	12.746	15.296			
30	17.454	2.545	5.090	7.635	10.180	12.725	15.270			
40	23.272	2.541	5.082	7.622	10.163	12.704	15.245			
50	29.090	2.537	5.073	7.610	10.146	12.683	15.220	5	0.001	0.001
30 00	.....	2.533	5.065	7.598	10.130	12.662	15.195	10	.004	.004
10	5.819	2.528	5.056	7.585	10.113	12.641	15.169	15	.008	.008
20	11.638	2.524	5.048	7.572	10.096	12.620	15.143	20	.015	.015
30	17.457	2.520	5.039	7.559	10.078	12.598	15.118	25	.023	.023
40	23.276	2.515	5.031	7.546	10.061	12.577	15.092	30	.033	.034
50	29.094	2.511	5.022	7.533	10.044	12.555	15.066		32°	
31 00	.....	2.507	5.014	7.520	10.027	12.534	15.040			
10	5.820	2.502	5.005	7.507	10.009	12.512	15.014	5	0.001	
20	11.640	2.498	4.996	7.494	9.992	12.490	14.987	10	.004	
30	17.460	2.493	4.987	7.480	9.974	12.467	14.960	15	.009	
40	23.280	2.489	4.978	7.467	9.956	12.445	14.934	20	.015	
50	29.100	2.485	4.969	7.454	9.938	12.423	14.908	25	.024	
32 00	.....	2.480	4.960	7.441	9.921	12.401	14.881	30	.034	

TABLE 6.—Coordinates for projection of maps (scale 1:75000)—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	32°	33°
°	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>			
32 00	.....	2.480	4.960	7.441	9.921	12.401	14.881	5	.001	.001
10	5.821	2.476	4.951	7.427	9.903	12.379	14.854			
20	11.642	2.471	4.942	7.413	9.884	12.355	14.827			
30	17.462	2.467	4.933	7.400	9.866	12.333	14.800			
40	23.283	2.462	4.924	7.386	9.848	12.310	14.772			
50	29.104	2.458	4.915	7.373	9.830	12.288	14.745			
33 00	.....	2.453	4.906	7.359	9.812	12.265	14.717	10	.004	.004
10	5.822	2.448	4.896	7.345	9.793	12.241	14.689	15	.009	.009
20	11.643	2.444	4.887	7.331	9.774	12.218	14.661	20	.015	.016
30	17.465	2.439	4.878	7.316	9.755	12.194	14.633	25	.024	.024
40	23.287	2.434	4.868	7.302	9.736	12.171	14.605	30	.034	.035
50	29.109	2.429	4.859	7.288	9.718	12.147	14.576			
34 00	.....	2.425	4.850	7.274	9.699	12.124	14.549	5	.001	.001
10	5.823	2.420	4.840	7.260	9.680	12.100	14.520			
20	11.645	2.415	4.830	7.246	9.661	12.076	14.491			
30	17.468	2.410	4.821	7.231	9.642	12.052	14.462			
40	23.291	2.406	4.811	7.217	9.622	12.028	14.434			
50	29.113	2.401	4.802	7.203	9.604	12.004	14.405			
35 00	.....	2.396	4.792	7.188	9.584	11.980	14.376	10	.004	.004
10	5.824	2.391	4.782	7.174	9.565	11.956	14.347	15	.009	.009
20	11.647	2.386	4.773	7.159	9.545	11.932	14.318	20	.016	.016
30	17.471	2.381	4.763	7.144	9.526	11.907	14.288	25	.025	.025
40	23.294	2.377	4.753	7.130	9.506	11.883	14.259	30	.036	.036
50	29.118	2.372	4.743	7.115	9.486	11.858	14.230		36°	37°
36 00	.....	2.367	4.733	7.099	9.466	11.833	14.200	5	.001	.001
10	5.824	2.362	4.723	7.085	9.446	11.808	14.170			
20	11.649	2.357	4.713	7.070	9.426	11.783	14.139			
30	17.473	2.351	4.703	7.055	9.406	11.757	14.109			
40	23.297	2.346	4.693	7.039	9.386	11.732	14.078			
50	29.122	2.341	4.683	7.024	9.366	11.707	14.048			
37 00	.....	2.336	4.673	7.009	9.345	11.682	14.018	5	.001	.001
10	5.826	2.331	4.662	6.994	9.325	11.656	13.987			
20	11.651	2.326	4.652	6.978	9.304	11.630	13.956			
30	17.477	2.321	4.642	6.963	9.284	11.605	13.925			
40	23.302	2.316	4.631	6.947	9.263	11.579	13.894			
50	29.128	2.311	4.621	6.932	9.242	11.553	13.864			
38 00	.....	2.305	4.611	6.916	9.222	11.527	13.832	5	.001	.001
10	5.827	2.300	4.600	6.900	9.200	11.501	13.801			
20	11.653	2.295	4.590	6.884	9.179	11.474	13.769			
30	17.480	2.290	4.579	6.869	9.158	11.448	13.737			
40	23.306	2.284	4.568	6.853	9.137	11.421	13.705			
50	29.133	2.279	4.558	6.837	9.116	11.395	13.673			
39 00	.....	2.274	4.548	6.821	9.095	11.369	13.642	5	.001	.001
10	5.828	2.268	4.537	6.805	9.073	11.342	13.610			
20	11.655	2.263	4.526	6.789	9.052	11.315	13.577			
30	17.483	2.258	4.515	6.773	9.030	11.288	13.545			
40	23.310	2.252	4.504	6.756	9.008	11.261	13.513			
50	29.138	2.247	4.493	6.740	8.987	11.234	13.480			
40 00	.....	2.241	4.483	6.724	8.965	11.207	13.448	10	.004	.004
								15	.009	.009
								20	.017	.017
								25	.026	.026
								30	.037	.037
									40°	



TABLE 6.—Coordinates for projection of maps (scale  $\frac{1}{125000}$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.		
° /	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>			
40 00	.....	2.241	4.483	6.724	8.965	11.207	13.448		40°	41°
10	5.829	2.236	4.472	6.707	8.943	11.179	13.415			
20	11.657	2.230	4.461	6.691	8.921	11.152	13.382			
30	17.486	2.225	4.450	6.674	8.899	11.124	13.349			
40	23.314	2.219	4.439	6.658	8.877	11.097	13.316			
50	29.143	2.214	4.428	6.641	8.856	11.069	13.283			
41 00	.....	2.208	4.417	6.625	8.834	11.042	13.250	5	<i>Inches.</i> 0.001	<i>Inches.</i> 0.001
10	5.830	2.203	4.406	6.608	8.811	11.014	13.217	10	.004	.004
20	11.659	2.197	4.394	6.591	8.788	11.014	13.183	15	.009	.009
30	17.489	2.192	4.383	6.575	8.766	11.014	13.149	20	.017	.017
40	23.319	2.186	4.372	6.558	8.744	11.029	13.115	25	.026	.026
50	29.149	2.180	4.360	6.541	8.721	11.014	13.081	30	.038	.038
42 00	.....	2.175	4.349	6.524	8.698	10.873	13.048		42°	43°
10	5.831	2.169	4.338	6.507	8.676	10.844	13.013			
20	11.661	2.163	4.326	6.490	8.653	10.816	12.979			
30	17.492	2.157	4.315	6.472	8.630	10.787	12.945			
40	23.323	2.152	4.303	6.455	8.607	10.759	12.910	5	0.001	0.001
50	29.154	2.146	4.292	6.438	8.584	10.730	12.876	10	.004	.004
43 00	.....	2.140	4.281	6.421	8.561	10.702	12.842	15	.010	.010
10	5.832	2.135	4.269	6.403	8.538	10.672	12.807	20	.017	.017
20	11.663	2.129	4.257	6.386	8.514	10.643	12.772	25	.026	.026
30	17.496	2.123	4.246	6.368	8.491	10.614	12.737	30	.038	.038
40	23.327	2.117	4.234	6.351	8.468	10.585	12.701		44°	45°
50	29.159	2.111	4.222	6.333	8.444	10.556	12.667			
44 00	.....	2.105	4.210	6.316	8.421	10.526	12.631			
10	5.833	2.099	4.199	6.298	8.397	10.496	12.596	5	0.001	0.001
20	11.666	2.093	4.187	6.280	8.373	10.467	12.560	10	.004	.004
30	17.498	2.087	4.175	6.262	8.350	10.437	12.524	15	.010	.010
40	23.331	2.081	4.163	6.244	8.326	10.407	12.489	20	.017	.017
50	29.164	2.076	4.151	6.227	8.302	10.378	12.453	25	.027	.027
45 00	.....	2.070	4.139	6.209	8.278	10.348	12.417	30	.038	.038
10	5.834	2.064	4.127	6.191	8.254	10.317	12.381			
20	11.672	2.057	4.115	6.172	8.230	10.288	12.345		46°	47°
30	17.501	2.051	4.103	6.154	8.206	10.257	12.308			
40	23.335	2.045	4.091	6.136	8.181	10.226	12.272			
50	29.169	2.039	4.079	6.118	8.157	10.197	12.236			
46 00	.....	2.033	4.067	6.100	8.133	10.166	12.199	5	0.001	0.001
10	5.835	2.027	4.054	6.081	8.108	10.136	12.163	10	.004	.004
20	11.670	2.021	4.042	6.063	8.084	10.104	12.125	15	.010	.010
30	17.504	2.015	4.030	6.044	8.059	10.074	12.089	20	.017	.017
40	23.339	2.009	4.017	6.026	8.034	10.043	12.052	25	.027	.027
50	29.174	2.003	4.005	6.008	8.010	10.013	12.015	30	.038	.038
47 00	.....	1.996	3.992	5.989	7.985	9.981	11.978		48°	
10	5.836	1.990	3.980	5.970	7.960	9.951	11.941			
20	11.672	1.984	3.968	5.951	7.935	9.919	11.903	5	0.001	
30	17.508	1.978	3.955	5.933	7.910	9.888	11.866	10	.004	
40	23.344	1.971	3.943	5.914	7.885	9.857	11.828	15	.010	
50	29.180	1.965	3.930	5.895	7.860	9.826	11.791	20	.017	
48 00	.....	1.969	3.917	5.876	7.835	9.794	11.752	25	.026	
								30	.038	



**TABLE 6.—Coordinates for projection of maps (scale 1:125,000).—Continued.**

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	56°	57°
°	'	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
56	00	.....	1.638	3.275	4.913	6.551	8.188	9.826		
	10	5.845	1.631	3.261	4.892	6.522	8.153	9.784		
	20	11.690	1.624	3.247	4.870	6.494	8.118	9.741		
	30	17.535	1.616	3.233	4.849	6.466	8.082	9.698		
	40	23.380	1.609	3.219	4.828	6.437	8.046	9.656		
	50	29.224	1.602	3.204	4.807	6.409	8.011	9.613		
57	00	.....	1.595	3.190	4.785	6.380	7.976	9.571	5	0.001
	10	5.846	1.588	3.176	4.764	6.352	7.940	9.527	10	0.004
	20	11.692	1.581	3.162	4.742	6.322	7.904	9.485	15	0.009
	30	17.537	1.574	3.147	4.721	6.294	7.868	9.442	20	0.016
	40	23.383	1.566	3.133	4.699	6.266	7.832	9.398	25	0.025
	50	29.229	1.559	3.119	4.678	6.237	7.796	9.356	30	0.036
58	00	.....	1.552	3.104	4.656	6.208	7.760	9.313		
	10	5.847	1.545	3.090	4.634	6.179	7.724	9.269		
	20	11.694	1.538	3.075	4.613	6.150	7.688	9.226		
	30	17.540	1.530	3.061	4.591	6.122	7.652	9.182		
	40	23.387	1.523	3.046	4.569	6.092	7.616	9.139	5	0.001
	50	29.234	1.516	3.032	4.547	6.063	7.579	9.095	10	0.004
59	00	.....	1.509	3.017	4.526	6.034	7.543	9.052	15	0.009
	10	5.848	1.501	3.003	4.504	6.005	7.506	9.008	20	0.015
	20	11.695	1.494	2.988	4.482	5.976	7.470	8.963	25	0.024
	30	17.543	1.487	2.973	4.460	5.946	7.433	8.920	30	0.034
	40	23.391	1.479	2.959	4.438	5.917	7.396	8.876		
	50	29.238	1.472	2.944	4.416	5.888	7.360	8.831		
60	00	.....	1.465	2.929	4.394	5.858	7.323	8.788		
	10	5.849	1.457	2.914	4.372	5.829	7.286	8.743	5	0.001
	20	11.697	1.450	2.900	4.349	5.799	7.249	8.699	10	0.004
	30	17.546	1.442	2.885	4.327	5.770	7.212	8.654	15	0.008
	40	23.394	1.435	2.870	4.305	5.740	7.175	8.610	20	0.014
	50	29.243	1.428	2.855	4.283	5.710	7.138	8.566	25	0.023
61	00	.....	1.320	2.840	4.261	5.681	7.101	8.521	30	0.033
	10	5.850	1.313	2.825	4.238	5.651	7.064	8.476		
	20	11.699	1.405	2.810	4.216	5.621	7.026	8.431		
	30	17.549	1.398	2.795	4.193	5.591	6.988	8.386		
	40	23.398	1.390	2.781	4.171	5.561	6.952	8.342		
	50	29.248	1.383	2.766	4.148	5.531	6.914	8.297		
62	00	.....	1.375	2.751	4.126	5.501	6.877	8.252		
	10	5.850	1.368	2.736	4.103	5.471	6.839	8.207	5	0.001
	20	11.701	1.360	2.720	4.081	5.441	6.801	8.161	10	0.008
	30	17.551	1.353	2.705	4.058	5.410	6.763	8.116	15	0.014
	40	23.402	1.345	2.690	4.035	5.380	6.726	8.071	20	0.022
	50	29.252	1.338	2.675	4.013	5.350	6.688	8.026	25	0.031
63	00	.....	1.330	2.660	3.990	5.320	6.650	7.980		
	10	5.851	1.322	2.645	3.967	5.290	6.612	7.934		
	20	11.702	1.315	2.630	3.944	5.259	6.574	7.889	5	0.001
	30	17.554	1.307	2.614	3.921	5.228	6.536	7.843	10	0.003
	40	23.405	1.300	2.599	3.899	5.198	6.498	7.797	15	0.008
	50	29.256	1.292	2.584	3.876	5.168	6.460	7.751	20	0.013
64	00	.....	1.284	2.569	3.853	5.137	6.422	7.706	25	0.021
									30	0.030

TABLE 6.—*Coordinates for projection of maps (scale 1:150,000)*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
°	'	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	64°	65°
64	00	.....	1.284	2.569	3.853	5.137	6.422	7.706		
	10	5.852	1.277	2.553	3.830	5.106	6.383	7.660		
	20	11.704	1.269	2.538	3.807	5.076	6.345	7.614		
	30	17.556	1.261	2.523	3.784	5.045	6.307	7.568		
	40	23.408	1.254	2.507	3.761	5.014	6.268	7.522		
	50	29.260	1.246	2.492	3.738	4.984	6.230	7.476		
65	00	.....	1.238	2.477	3.715	4.953	6.192	7.430		
	10	5.858	1.231	2.461	3.692	4.922	6.153	7.384		
	20	11.706	1.223	2.446	3.668	4.891	6.114	7.337		
	30	17.558	1.215	2.430	3.645	4.860	6.075	7.290		
	40	23.411	1.207	2.415	3.622	4.829	6.037	7.244		
	50	29.264	1.200	2.399	3.599	4.798	5.998	7.198		
66	00	.....	1.192	2.384	3.575	4.767	5.959	7.151		
	10	5.854	1.184	2.368	3.552	4.736	5.920	7.104		
	20	11.707	1.176	2.352	3.529	4.705	5.881	7.057		
	30	17.561	1.168	2.337	3.505	4.673	5.842	7.010		
	40	23.414	1.161	2.321	3.482	4.642	5.803	6.963		
	50	29.268	1.153	2.305	3.458	4.611	5.764	6.916		
67	00	.....	1.145	2.290	3.435	4.580	5.725	6.869		
	10	5.854	1.137	2.274	3.411	4.548	5.685	6.822		
	20	11.709	1.129	2.258	3.388	4.517	5.646	6.775		
	30	17.563	1.121	2.243	3.364	4.485	5.607	6.728		
	40	23.418	1.113	2.227	3.340	4.454	5.567	6.680		
	50	29.272	1.106	2.211	3.317	4.422	5.528	6.634		
68	00	.....	1.098	2.195	3.293	4.391	5.489	6.586		
	10	5.855	1.090	2.180	3.269	4.359	5.449	6.539		
	20	11.710	1.082	2.164	3.246	4.328	5.410	6.491		
	30	17.565	1.074	2.148	3.222	4.296	5.370	6.443		
	40	23.420	1.066	2.132	3.198	4.264	5.330	6.396		
	50	29.276	1.058	2.116	3.174	4.232	5.291	6.349		
69	00	.....	1.050	2.100	3.151	4.201	5.251	6.301		
	10	5.856	1.042	2.084	3.127	4.169	5.211	6.253		
	20	11.712	1.034	2.068	3.103	4.137	5.171	6.205		
	30	17.567	1.025	2.052	3.079	4.105	5.131	6.157		
	40	23.423	1.018	2.037	3.055	4.073	5.092	6.110		
	50	29.279	1.010	2.021	3.031	4.041	5.052	6.062		
70	00	.....	1.002	2.005	3.007	4.009	5.012	6.014		
	10	5.856	.994	1.989	2.983	3.977	4.972	5.966		
	20	11.713	.986	1.972	2.959	3.945	4.931	5.917		
	30	17.570	.978	1.956	2.935	3.913	4.891	5.869		
	40	23.426	.970	1.940	2.911	3.881	4.851	5.821		
	50	29.282	.962	1.924	2.886	3.848	4.811	5.773		
71	00	.....	.954	1.908	2.862	3.816	4.771	5.725		
	10	5.857	.946	1.892	2.838	3.784	4.730	5.676		
	20	11.714	.938	1.876	2.814	3.752	4.690	5.628		
	30	17.572	.930	1.860	2.790	3.720	4.650	5.579		
	40	23.429	.922	1.844	2.765	3.687	4.609	5.531		
	50	29.286	.914	1.828	2.741	3.655	4.569	5.483		
72	00	.....	.906	1.811	2.717	3.623	4.529	5.434		

TABLE 6.—*Coordinates for projection of maps (scale 1:150,000)*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even-degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longitude.	10' longitude.	15' longitude.	20' longitude.	25' longitude.	30' longitude.			
°	'	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longitude interval.	72°	73°
72	00	.....	.906	1.811	2.717	3.623	4.529	5.434		
	10	5.858	.898	1.795	2.693	3.590	4.488	5.386		
	20	11.716	.889	1.779	2.668	3.558	4.447	5.336		
	30	17.573	.881	1.763	2.644	3.525	4.407	5.288		
	40	23.431	.873	1.746	2.620	3.493	4.366	5.239		
	50	29.289	.865	1.730	2.595	3.460	4.325	5.190		
73	00	.....	.857	1.714	2.571	3.428	4.285	5.141		
	10	5.858	.849	1.697	2.546	3.395	4.244	5.092		
	20	11.717	.841	1.681	2.522	3.362	4.203	5.044		
	30	17.575	.832	1.665	2.497	3.330	4.162	4.994		
	40	23.434	.824	1.648	2.473	3.297	4.121	4.945		
	50	29.292	.816	1.632	2.448	3.264	4.081	4.897		
74	00	.....	.808	1.616	2.424	3.232	4.040	4.847		
	10	5.859	.800	1.599	2.399	3.199	3.999	4.798		
	20	11.718	.791	1.583	2.374	3.160	3.957	4.748		
	30	17.577	.783	1.566	2.350	3.133	3.916	4.699		
	40	23.436	.775	1.550	2.325	3.100	3.875	4.650		
	50	29.295	.767	1.534	2.300	3.067	3.834	4.601		
75	00	.....	.759	1.517	2.276	3.034	3.793	4.552		
	10	5.860	.750	1.501	2.251	3.002	3.752	4.502		
	20	11.719	.742	1.484	2.226	2.968	3.711	4.453		
	30	17.578	.734	1.468	2.201	2.935	3.669	4.403		
	40	23.438	.726	1.451	2.177	2.902	3.628	4.354		
	50	29.298	.717	1.435	2.152	2.870	3.587	4.304		
76	00	.....	.709	1.418	2.127	2.836	3.546	4.255		
	10	5.860	.701	1.402	2.102	2.803	3.504	4.205		
	20	11.720	.692	1.385	2.078	2.770	3.463	4.155		
	30	17.580	.684	1.368	2.053	2.737	3.421	4.105		
	40	23.440	.676	1.352	2.028	2.704	3.380	4.056		
	50	29.300	.668	1.335	2.003	2.671	3.339	4.006		
77	00	.....	.659	1.319	1.978	2.638	3.297	3.956		
	10	5.861	.651	1.302	1.953	2.604	3.256	3.907		
	20	11.721	.643	1.285	1.928	2.571	3.214	3.856		
	30	17.582	.634	1.269	1.903	2.538	3.172	3.806		
	40	23.442	.626	1.252	1.878	2.504	3.131	3.757		
	50	29.302	.618	1.235	1.853	2.471	3.089	3.706		
78	00	.....	.609	1.219	1.828	2.438	3.047	3.656		
	10	5.861	.601	1.202	1.803	2.404	3.005	3.606		
	20	11.722	.593	1.185	1.778	2.371	2.964	3.556		
	30	17.583	.584	1.169	1.753	2.338	2.922	3.506		
	40	23.444	.576	1.152	1.728	2.304	2.880	3.456		
	50	29.304	.568	1.135	1.703	2.270	2.838	3.406		
79	00	.....	.559	1.119	1.678	2.237	2.797	3.356		
	10	5.861	.551	1.102	1.653	2.204	2.755	3.305		
	20	11.723	.542	1.085	1.628	2.170	2.713	3.255		
	30	17.584	.534	1.068	1.602	2.136	2.671	3.205		
	40	23.445	.526	1.052	1.577	2.103	2.629	3.155		
	50	29.306	.517	1.035	1.552	2.070	2.587	3.104		
80	00	.....	.509	1.018	1.527	2.036	2.545	3.054		

TABLE 7.—*Coordinates for projection of maps (scale  $\frac{1}{333,333}$ ).*

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
° ' "	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	0°	1°
0 00	.....	5.764	11.529	17.293	23.058	28.822	34.586			
10	11.451	5.764	11.528	17.293	23.057	28.821	34.585			
20	22.901	5.764	11.528	17.292	23.056	28.821	34.585			
30	34.352	5.764	11.528	17.292	23.056	28.820	34.583			
40	45.803	5.764	11.528	17.291	23.055	28.819	34.583			
50	57.254	5.764	11.527	17.291	23.054	28.818	34.582			
1 00	68.704	5.764	11.527	17.291	23.054	28.818	34.581			
10	11.451	5.763	11.526	17.289	23.052	28.816	34.579			
20	22.901	5.763	11.525	17.288	23.050	28.813	34.576			
30	34.352	5.762	11.524	17.287	23.049	28.811	34.573			
40	45.803	5.762	11.524	17.285	23.047	28.809	34.571			
50	57.254	5.761	11.523	17.284	23.045	28.807	34.568			
2 00	68.704	5.761	11.522	17.283	23.044	28.805	34.565			
10	11.451	5.760	11.520	17.281	23.041	28.801	34.561		2°	3°
20	22.902	5.759	11.519	17.278	23.038	28.797	34.556			
30	34.353	5.759	11.517	17.276	23.035	28.794	34.552			
40	45.804	5.758	11.516	17.274	23.032	28.790	34.548			
50	57.256	5.757	11.514	17.272	23.029	28.786	34.543			
3 00	68.705	5.756	11.513	17.270	23.026	28.783	34.539			
10	11.451	5.756	11.511	17.267	23.022	28.778	34.533			
20	22.902	5.754	11.509	17.264	23.018	28.773	34.527			
30	34.353	5.753	11.507	17.260	23.014	28.767	34.520			
40	45.804	5.752	11.505	17.257	23.010	28.762	34.514			
50	57.255	5.751	11.503	17.254	23.006	28.757	34.508			
4 00	68.706	5.750	11.501	17.251	23.002	28.752	34.502		4°	5°
10	11.451	5.749	11.498	17.247	22.996	28.746	34.495			
20	22.903	5.748	11.496	17.243	22.991	28.739	34.487			
30	34.354	5.746	11.493	17.240	22.986	28.733	34.479			
40	45.805	5.745	11.490	17.236	22.981	28.726	34.471			
50	57.256	5.744	11.488	17.232	22.976	28.720	34.463			
5 00	68.708	5.743	11.485	17.228	22.970	28.713	34.456			
10	11.452	5.741	11.482	17.223	22.964	28.705	34.446			
20	22.903	5.739	11.479	17.218	22.958	28.697	34.436			
30	34.855	5.738	11.476	17.213	22.951	28.689	34.427			
40	45.806	5.736	11.472	17.209	22.945	28.681	34.417			
50	57.258	5.735	11.469	17.204	22.938	28.673	34.408			
6 00	68.710	5.733	11.466	17.199	22.932	28.665	34.398			
10	11.452	5.731	11.462	17.193	22.924	28.656	34.387			
20	22.904	5.729	11.458	17.188	22.917	28.646	34.375			
30	34.356	5.727	11.455	17.182	22.910	28.637	34.364			
40	45.808	5.726	11.451	17.177	22.902	28.628	34.353			
50	57.260	5.724	11.447	17.171	22.894	28.618	34.342			
7 00	68.712	5.722	11.443	17.165	22.887	28.609	34.330			
									6°	7°
								5	0.000	0.000
								10	.002	.002
								15	.004	.005
								20	.007	.008
								25	.011	.013
								30	.016	.018

TABLE 7.—*Coordinates for projection of maps (scale 1:100,000)*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	7°	8°
7 00	68.712	5.722	11.443	17.165	22.887	28.609	34.330			
10	11.452	5.720	11.439	17.159	22.878	28.598	34.317			
20	22.905	5.717	11.435	17.152	22.869	28.587	34.304			
30	34.358	5.715	11.430	17.146	22.861	28.576	34.291			
40	45.810	5.713	11.426	17.139	22.852	28.565	34.278			
50	57.262	5.711	11.422	17.132	22.843	28.554	34.265			
8 00	68.715	5.709	11.417	17.126	22.834	28.543	34.252			
10	11.453	5.706	11.412	17.119	22.825	28.531	34.237			
20	22.906	5.704	11.407	17.111	22.815	28.519	34.222			
30	34.359	5.701	11.403	17.104	22.806	28.507	34.208			
40	45.812	5.699	11.398	17.096	22.795	28.494	34.193			
50	57.265	5.696	11.393	17.089	22.786	28.482	34.178			
9 00	68.718	5.694	11.388	17.082	22.776	28.470	34.163			
10	11.454	5.691	11.382	17.073	22.764	28.456	34.147			
20	22.907	5.688	11.377	17.065	22.754	28.442	34.130			
30	34.361	5.686	11.371	17.057	22.742	28.428	34.114			
40	45.814	5.683	11.366	17.049	22.732	28.415	34.097			
50	57.268	5.680	11.360	17.040	22.720	28.401	34.081			
10 00	68.722	5.677	11.355	17.032	22.710	28.387	34.064			
10	11.454	5.674	11.349	17.023	22.698	28.372	34.046			
20	22.909	5.671	11.343	17.014	22.685	28.357	34.028			
30	34.263	5.668	11.337	17.005	22.673	28.342	34.010			
40	45.817	5.665	11.331	16.996	22.661	28.327	33.992			
50	57.272	5.662	11.324	16.987	22.649	28.311	33.973			
11 00	68.726	5.659	11.318	16.978	22.637	28.296	33.955		11°	12°
10	11.455	5.656	11.312	16.968	22.624	28.280	33.935			
20	22.910	5.652	11.305	16.958	22.610	28.263	33.915	5	0.001	0.001
30	34.265	5.649	11.298	16.948	22.597	28.246	33.895	10	.003	.003
40	45.820	5.646	11.292	16.938	22.584	28.230	33.875	15	.007	.008
50	57.275	5.642	11.285	16.928	22.570	28.213	33.855	20	.013	.014
12 00	68.730	5.639	11.278	16.918	22.557	28.196	33.835	25	.020	.021
10	11.456	5.636	11.271	16.907	22.542	28.178	33.814	30	.028	.031
20	22.912	5.632	11.264	16.896	22.528	28.160	33.792			
30	34.267	5.628	11.257	16.885	22.514	28.142	33.770			
40	45.823	5.625	11.250	16.874	22.499	28.124	33.749		13°	14°
50	57.279	5.621	11.242	16.864	22.485	28.106	33.727			
13 00	68.735	5.618	11.235	16.853	22.470	28.088	33.706			
10	11.457	5.614	11.227	16.841	22.455	28.069	33.682	5	0.001	0.001
20	22.913	5.610	11.220	16.829	22.439	28.049	33.659	10	.004	.004
30	34.270	5.606	11.212	16.818	22.424	28.030	33.635	15	.008	.009
40	45.827	5.602	11.204	16.806	22.408	28.010	33.612	20	.015	.016
50	57.284	5.598	11.196	16.794	22.392	27.991	33.589	25	.023	.025
14 00	68.740	5.594	11.188	16.783	22.377	27.971	33.565	30	.033	.035

TABLE 7.—*Coordinates for projection of maps (scale  $\frac{1}{33333}$ )—Continued.*

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
° ' "	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	14°	15°
14 00	68.740	5.594	11.188	16.783	22.377	27.971	33.565			
10	11.458	5.590	11.180	16.770	22.360	27.950	33.540			
20	22.915	5.586	11.172	16.758	22.344	27.930	33.515			
30	34.373	5.582	11.163	16.745	22.327	27.909	33.490			
40	45.830	5.578	11.155	16.733	22.310	27.888	33.465			
50	57.288	5.573	11.147	16.720	22.294	27.867	33.440			
15 00	68.746	5.569	11.138	16.708	22.277	27.846	33.415			
10	11.459	5.565	11.130	16.694	22.259	27.824	33.389			
20	22.917	5.560	11.121	16.681	22.241	27.802	33.362			
30	34.376	5.556	11.112	16.667	22.223	27.779	33.335			
40	45.834	5.551	11.103	16.654	22.206	27.757	33.308			
50	57.293	5.547	11.094	16.641	22.188	27.735	33.282			
16 00	68.752	5.542	11.085	16.628	22.170	27.713	33.255			
10	11.460	5.538	11.076	16.613	22.151	27.689	33.227			
20	22.919	5.533	11.066	16.599	22.132	27.665	33.198			
30	34.379	5.528	11.057	16.585	22.113	27.642	33.170			
40	45.838	5.524	11.047	16.571	22.094	27.618	33.142			
50	57.298	5.519	11.038	16.556	22.075	27.594	33.113			
17 00	68.758	5.514	11.028	16.542	22.056	27.571	33.085			
10	11.461	5.509	11.018	16.527	22.036	27.546	33.055			
20	22.921	5.504	11.008	16.512	22.016	27.521	33.025			
30	34.382	5.499	10.998	16.497	21.996	27.495	32.994			
40	45.843	5.494	10.988	16.482	21.976	27.470	32.964			
50	57.304	5.489	10.978	16.467	21.956	27.445	32.934			
18 00	68.764	5.484	10.968	16.452	21.936	27.420	32.904			
10	11.462	5.479	10.957	16.436	21.915	27.394	32.872			
20	22.924	5.473	10.947	16.420	21.894	27.367	32.840			
30	34.386	5.468	10.936	16.404	21.872	27.341	32.809			
40	45.848	5.463	10.926	16.389	21.852	27.315	32.777			
50	57.310	5.458	10.915	16.373	21.830	27.288	32.746			
19 00	68.771	5.452	10.905	16.357	21.809	27.262	32.714			
10	11.463	5.447	10.893	16.340	21.787	27.234	32.680			
20	22.926	5.441	10.882	16.324	21.765	27.206	32.647			
30	34.390	5.436	10.871	16.307	21.742	27.178	32.614			
40	45.853	5.430	10.860	16.290	21.720	27.150	32.580			
50	57.316	5.424	10.849	16.274	21.698	27.123	32.547			
20 00	68.779	5.419	10.838	16.257	21.676	27.095	32.513			
10	11.464	5.413	10.826	16.239	21.652	27.065	32.478			
20	22.929	5.407	10.814	16.222	21.629	27.036	32.443			
30	34.394	5.401	10.803	16.204	21.605	27.007	32.408			
40	45.858	5.396	10.791	16.187	21.582	26.978	32.373			
50	57.322	5.390	10.779	16.169	21.558	26.948	32.338			
21 00	68.787	5.384	10.768	16.151	21.535	26.919	32.303			



TABLE 7.—*Coordinates for projection of maps (scale  $\frac{1}{333,600}$ )—Continued.*

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	21°	22°
° ' "	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
21 00	68.787	5.384	10.768	16.151	21.535	26.919	32.303			
10	11.466	5.378	10.755	16.133	21.511	26.889	32.266			
20	22.932	5.372	10.743	16.115	21.486	26.858	32.230			
30	34.397	5.366	10.731	16.097	21.462	26.828	32.193			
40	45.863	5.359	10.719	16.078	21.438	26.797	32.156			
50	57.329	5.353	10.707	16.060	21.413	26.767	32.120			
22 00	68.795	5.347	10.694	16.042	21.389	26.736	32.083			
10	11.467	5.341	10.682	16.022	21.363	26.704	32.045			
20	22.934	5.334	10.669	16.003	21.338	26.672	32.006			
30	34.401	5.328	10.656	15.984	21.312	26.641	31.969			
40	45.868	5.322	10.643	15.965	21.287	26.609	31.930			
50	57.336	5.315	10.631	15.946	21.261	26.577	31.892			
23 00	68.803	5.309	10.618	15.927	21.236	26.545	31.853			
10	11.469	5.302	10.604	15.907	21.209	26.511	31.813		23°	24°
20	22.937	5.296	10.591	15.887	21.182	26.478	31.774	5	0.001	0.002
30	34.406	5.289	10.578	15.867	21.156	26.445	31.733	10	.006	.006
40	45.874	5.282	10.565	15.847	21.129	26.412	31.694	15	.014	.014
50	57.343	5.276	10.551	15.827	21.102	26.378	31.654	20	.024	.025
24 00	68.812	5.269	10.538	15.807	21.076	26.345	31.614	25	.038	.039
10	11.470	5.263	10.526	15.789	21.052	26.315	31.577	30	.054	.056
20	22.940	5.256	10.512	15.767	21.023	26.279	31.535			
30	34.410	5.249	10.498	15.746	20.996	26.244	31.493			
40	45.880	5.242	10.483	15.725	20.967	26.209	31.450			
50	57.350	5.235	10.469	15.704	20.938	26.173	31.408			
25 00	68.821	5.227	10.455	15.682	20.910	26.137	31.365		25°	26°
10	11.472	5.220	10.441	15.661	20.881	26.101	31.322	5	0.002	0.002
20	22.943	5.213	10.426	15.639	20.852	26.065	31.279	10	.006	.007
30	34.415	5.206	10.412	15.618	20.824	26.029	31.235	15	.014	.015
40	45.886	5.199	10.397	15.596	20.795	25.993	31.192	20	.026	.026
50	57.358	5.191	10.383	15.575	20.766	25.958	31.149	25	.040	.041
26 00	68.830	5.184	10.369	15.553	20.737	25.922	31.106	30	.058	.059
10	11.473	5.177	10.354	15.531	20.708	25.884	31.061			
20	22.946	5.169	10.339	15.508	20.678	25.847	31.017			
30	34.419	5.162	10.324	15.486	20.648	25.810	30.972			
40	45.892	5.154	10.309	15.463	20.618	25.772	30.927		27°	28°
50	57.365	5.147	10.294	15.441	20.588	25.735	30.882			
27 00	68.838	5.140	10.279	15.419	20.558	25.698	30.838	5	0.002	0.002
10	11.475	5.132	10.264	15.396	20.528	25.659	30.791	10	.007	.007
20	22.950	5.124	10.248	15.373	20.497	25.621	30.745	15	.015	.016
30	34.424	5.116	10.233	15.349	20.466	25.582	30.699	20	.027	.028
40	45.899	5.109	10.218	15.326	20.435	25.544	30.653	25	.042	.043
50	57.374	5.101	10.202	15.303	20.404	25.505	30.607	30	.061	.063
28 00	68.849	5.093	10.187	15.280	20.374	25.467	30.560			

TABLE 7.—*Coordinates for projection of maps (scale  $\frac{1}{33333}$ )—Continued.*

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	28°	29°
28 00	68.849	5.093	10.187	15.280	20.374	25.467	30.560			
10	11.476	5.085	10.171	15.256	20.342	25.427	30.513			
20	22.953	5.077	10.155	15.232	20.310	25.387	30.465			
30	34.430	5.069	10.139	15.208	20.278	25.347	30.417			
40	45.906	5.061	10.123	15.185	20.246	25.308	30.369			
50	57.383	5.054	10.107	15.161	20.214	25.268	30.321			
29 00	68.859	5.046	10.091	15.137	20.182	25.228	30.274			
10	11.478	5.037	10.075	15.112	20.150	25.187	30.224			
20	22.957	5.029	10.058	15.087	20.117	25.146	30.175			
30	34.435	5.021	10.042	15.063	20.084	25.105	30.126			
40	45.913	5.013	10.025	15.038	20.051	25.064	30.076			
50	57.391	5.004	10.009	15.013	20.018	25.022	30.027			
30 00	68.870	4.996	9.993	14.989	19.985	24.981	29.978			
10	11.480	4.988	9.976	14.963	19.951	24.939	29.927			
20	22.960	4.979	9.959	14.938	19.917	24.896	29.876			
30	34.440	4.971	9.942	14.912	19.883	24.854	29.825			
40	45.920	4.962	9.925	14.887	19.849	24.812	29.774			
50	57.400	4.954	9.908	14.862	19.815	24.769	29.723			
31 00	68.880	4.945	9.891	14.836	19.782	24.727	29.672			
10	11.482	4.937	9.873	14.810	19.747	24.683	29.620			
20	22.964	4.928	9.856	14.784	19.712	24.640	29.568			
30	34.446	4.919	9.838	14.758	19.677	24.596	29.515			
40	45.927	4.910	9.821	14.731	19.642	24.552	29.463			
50	57.409	4.902	9.804	14.705	19.607	24.509	29.411			
32 00	68.891	4.893	9.786	14.679	19.572	24.465	29.358			
10	11.484	4.884	9.768	14.652	19.536	24.420	29.305			
20	22.967	4.875	9.750	14.625	19.500	24.376	29.251			
30	34.451	4.866	9.732	14.598	19.465	24.331	29.197			
40	45.934	4.857	9.714	14.572	19.429	24.286	29.143			
50	57.418	4.848	9.696	14.545	19.393	24.241	29.089			
33 00	68.902	4.839	9.679	14.518	19.357	24.196	29.036			
10	11.485	4.830	9.660	14.490	19.320	24.150	28.980			
20	22.971	4.821	9.642	14.462	19.283	24.104	28.925			
30	34.456	4.812	9.623	14.435	19.246	24.058	28.870			
40	45.942	4.802	9.605	14.407	19.210	24.012	28.814			
50	57.427	4.793	9.586	14.379	19.173	23.966	28.759			
34 00	68.913	4.784	9.568	14.352	19.136	23.920	28.704			
10	11.487	4.774	9.549	14.323	19.098	23.872	28.647			
20	22.975	4.765	9.530	14.295	19.060	23.825	28.590			
30	34.462	4.755	9.511	14.267	19.022	23.778	28.533			
40	45.949	4.746	9.492	14.238	18.984	23.730	28.476			
50	57.437	4.737	9.473	14.210	18.946	23.683	28.420			
35 00	68.924	4.727	9.454	14.181	18.908	23.636	28.363			

TABLE 7.—Coordinates for projection of maps (scale  $\frac{1}{111,320}$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even-degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi-tude.	10' longi-tude.	15' longi-tude.	20' longi-tude.	25' longi-tude.	30' longi-tude.			
° ' "	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi-tude interval.	35°	36°
35 00	68.924	4.727	9.454	14.181	18.908	23.636	28.363			
10	11.489	4.717	9.435	14.152	18.870	23.587	28.305			
20	22.978	4.708	9.415	14.123	18.831	23.539	28.246			
30	34.468	4.698	9.396	14.094	18.792	23.490	28.188			
40	45.957	4.688	9.377	14.065	18.753	23.442	28.130			
50	57.446	4.679	9.357	14.036	18.714	23.393	28.072			
36 00	68.935	4.669	9.338	14.007	18.676	23.345	28.014			
10	11.491	4.659	9.318	13.977	18.636	23.295	27.954			
20	22.983	4.649	9.298	13.947	18.596	23.245	27.894			
30	34.474	4.639	9.278	13.917	18.556	23.195	27.835			
40	45.965	4.629	9.258	13.887	18.517	23.146	27.775			
50	57.457	4.619	9.238	13.858	18.477	23.096	27.715			
37 00	68.948	4.609	9.219	13.828	18.437	23.046	27.656		37°	38°
10	11.493	4.599	9.198	13.797	18.396	22.995	27.594			
20	22.986	4.589	9.178	13.767	18.356	22.944	27.533			
30	34.480	4.579	9.157	13.736	18.315	22.894	27.472			
40	45.973	4.568	9.137	13.706	18.274	22.843	27.411			
50	57.466	4.558	9.117	13.675	18.234	22.792	27.350			
38 00	68.959	4.548	9.096	13.645	18.193	22.741	27.289			
10	11.495	4.538	9.076	13.613	18.151	22.689	27.227			
20	22.990	4.527	9.055	13.582	18.109	22.637	27.164			
30	34.485	4.517	9.034	13.551	18.068	22.585	27.102			
40	45.980	4.506	9.013	13.520	18.026	22.533	27.039			
50	57.475	4.496	8.992	13.488	17.984	22.481	26.977			
39 00	68.970	4.486	8.971	13.457	17.943	22.429	26.914		39°	40°
10	11.497	4.475	8.950	13.425	17.900	22.375	26.851			
20	22.994	4.464	8.929	13.393	17.858	22.322	26.787			
30	34.491	4.454	8.908	13.361	17.815	22.269	26.723			
40	45.988	4.443	8.886	13.330	17.773	22.216	26.659			
50	57.485	4.433	8.865	13.298	17.730	22.163	26.595			
40 00	68.982	4.422	8.844	13.266	17.688	22.110	26.532			
10	11.499	4.411	8.822	13.233	17.644	22.055	26.466			
20	22.998	4.400	8.800	13.201	17.601	22.001	26.401			
30	34.497	4.389	8.779	13.168	17.557	21.947	26.336			
40	45.996	4.378	8.757	13.135	17.514	21.892	26.271			
50	57.495	4.368	8.735	13.103	17.470	21.838	26.206			
41 00	68.994	4.357	8.713	13.070	17.427	21.784	26.140		41°	42°
10	11.501	4.346	8.691	13.037	17.383	21.728	26.074			
20	23.002	4.335	8.669	13.004	17.338	21.673	26.007			
30	34.503	4.324	8.647	12.971	17.294	21.618	25.941			
40	46.004	4.312	8.625	12.937	17.250	21.562	25.875			
50	57.506	4.301	8.603	12.904	17.205	21.507	25.808			
42 00	69.007	4.290	8.581	12.871	17.161	21.451	25.742			

TABLE 7.—*Coordinates for projection of maps (scale  $\frac{1}{63360}$ )*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longitude.	10' longitude.	15' longitude.	20' longitude.	25' longitude.	30' longitude.	Longitude interval.	42°	43°
° ' "	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
42 00	69.007	4.290	8.581	12.871	17.161	21.451	25.742			
10	11.503	4.279	8.558	12.837	17.116	21.395	25.674			
20	23.006	4.268	8.535	12.803	17.071	21.338	25.606			
30	34.510	4.256	8.513	12.769	17.025	21.282	25.538			
40	46.013	4.245	8.490	12.735	16.980	21.225	25.470			
50	57.516	4.234	8.467	12.701	16.935	21.169	25.402			
43 00	69.019	4.222	8.445	12.667	16.890	21.112	25.334			
10	11.505	4.211	8.422	12.633	16.844	21.054	25.265			
20	23.010	4.199	8.399	12.598	16.798	20.997	25.196			
30	34.515	4.188	8.376	12.564	16.751	20.939	25.127			
40	46.020	4.176	8.353	12.529	16.705	20.882	25.058			
50	57.525	4.165	8.330	12.494	16.659	20.824	24.989			
44 00	69.030	4.153	8.307	12.460	16.613	20.767	24.920			
10	11.507	4.142	8.283	12.425	16.566	20.708	24.849			
20	23.014	4.130	8.260	12.390	16.519	20.649	24.779			
30	34.522	4.118	8.236	12.354	16.473	20.591	24.709			
40	46.029	4.106	8.213	12.319	16.426	20.532	24.638			
50	57.536	4.095	8.189	12.284	16.379	20.473	24.568			
45 00	69.043	4.083	8.166	12.249	16.332	20.415	24.498			
10	11.509	4.071	8.142	12.213	16.284	20.355	24.426			
20	23.018	4.059	8.118	12.177	16.236	20.295	24.354			
30	34.528	4.047	8.094	12.141	16.188	20.236	24.283			
40	46.037	4.035	8.070	12.105	16.141	20.176	24.211			
50	57.546	4.023	8.046	12.070	16.093	20.116	24.139			
46 00	69.055	4.011	8.023	12.034	16.045	20.056	24.068			
10	11.511	3.999	7.998	11.997	15.997	19.996	23.995			
20	23.023	3.987	7.974	11.961	15.948	19.935	23.922			
30	34.534	3.975	7.950	11.925	15.899	19.874	23.849			
40	46.045	3.963	7.925	11.888	15.851	19.813	23.776			
50	57.557	3.951	7.901	11.852	15.802	19.753	23.703			
47 00	69.068	3.938	7.877	11.815	15.754	19.692	23.630			
10	11.513	3.926	7.852	11.778	15.704	19.630	23.556			
20	23.027	3.914	7.827	11.741	15.655	19.569	23.482			
30	34.540	3.901	7.803	11.704	15.606	19.507	23.408			
40	46.053	3.889	7.778	11.667	15.556	19.445	23.334			
50	57.567	3.877	7.753	11.630	15.507	19.383	23.260			
48 00	69.080	3.864	7.729	11.593	15.457	19.322	23.186			
10	11.516	3.852	7.704	11.555	15.407	19.259	23.111			
20	23.031	3.839	7.679	11.518	15.357	19.196	23.035			
30	34.546	3.827	7.653	11.480	15.307	19.134	22.960			
40	46.062	3.814	7.628	11.442	15.257	19.071	22.885			
50	57.577	3.802	7.603	11.405	15.206	19.008	22.810			
49 00	69.093	3.789	7.578	11.367	15.156	18.945	22.734			

TABLE 7.—*Coordinates for projection of maps (scale  $\frac{1}{33333}$ )—Continued.*

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	49°	50°
°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
49 00	69.093	3.789	7.578	11.367	15.156	18.945	22.734			
10	11.517	3.776	7.553	11.329	15.105	18.882	22.658			
20	23.035	3.764	7.527	11.291	15.054	18.818	22.581			
30	34.552	3.751	7.502	11.253	15.003	18.754	22.505			
40	46.070	3.738	7.476	11.214	14.952	18.690	22.429			
50	57.587	3.725	7.451	11.176	14.901	18.627	22.352			
50 00	69.105	3.713	7.425	11.138	14.850	18.563	22.276			
10	11.520	3.700	7.399	11.099	14.799	18.499	22.198			
20	23.039	3.687	7.374	11.060	14.747	18.434	22.121			
30	34.558	3.674	7.348	11.021	14.695	18.369	22.043			
40	46.078	3.661	7.322	10.983	14.644	18.305	21.965			
50	57.598	3.648	7.296	10.944	14.592	18.240	21.888			
51 00	69.117	3.635	7.270	10.905	14.540	18.176	21.811			
10	11.521	3.622	7.244	10.866	14.488	18.110	21.732			
20	23.043	3.609	7.218	10.827	14.436	18.045	21.653			
30	34.564	3.596	7.191	10.787	14.383	17.979	21.574			
40	46.086	3.583	7.165	10.748	14.330	17.913	21.496			
50	57.607	3.570	7.139	10.709	14.278	17.848	21.417			
52 00	69.128	3.556	7.113	10.669	14.226	17.782	21.338			
10	11.523	3.543	7.086	10.629	14.172	17.716	21.259			
20	23.047	3.530	7.060	10.589	14.119	17.649	21.179			
30	34.570	3.516	7.033	10.550	14.066	17.583	21.099			
40	46.094	3.503	7.006	10.510	14.013	17.516	21.019			
50	57.617	3.490	6.980	10.470	13.960	17.450	20.939			
53 00	69.140	3.477	6.953	10.430	13.906	17.383	20.860			
10	11.525	3.463	6.926	10.389	13.852	17.316	20.779			
20	23.051	3.450	6.899	10.349	13.798	17.248	20.698			
30	34.576	3.436	6.872	10.309	13.745	17.181	20.617			
40	46.102	3.423	6.845	10.268	13.691	17.114	20.536			
50	57.627	3.409	6.818	10.228	13.637	17.046	20.455			
54 00	69.152	3.396	6.791	10.187	13.583	16.979	20.374			
10	11.527	3.382	6.764	10.146	13.528	16.910	20.292			
20	23.055	3.368	6.737	10.105	13.474	16.842	20.210			
30	34.582	3.355	6.709	10.064	13.419	16.774	20.128			
40	46.109	3.341	6.682	10.023	13.364	16.706	20.047			
50	57.636	3.327	6.655	9.982	13.310	16.637	19.964			
55 00	69.164	3.314	6.628	9.941	13.255	16.569	19.883			
10	11.529	3.300	6.600	9.900	13.200	16.500	19.800			
20	23.059	3.286	6.572	9.859	13.145	16.431	19.717			
30	34.588	3.272	6.545	9.817	13.089	16.362	19.634			
40	46.117	3.258	6.517	9.776	13.034	16.293	19.551			
50	57.646	3.245	6.489	9.734	12.979	16.224	19.468			
56 00	69.176	3.231	6.462	9.693	12.924	16.155	19.385			

TABLE 7.—*Coordinates for projection of maps (scale  $\frac{1}{33,333}$ )—Continued.*

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
°	'	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	Inches.	Inches.
56	00	69.176	3.231	6.462	9.693	12.924	16.155	19.385	56°	57°
	10	11.531	3.217	6.454	9.651	12.868	16.085	19.301		
	20	23.063	3.203	6.406	9.609	12.812	16.015	19.217		
	30	34.594	3.189	6.378	9.567	12.756	15.945	19.134		
	40	46.125	3.175	6.350	9.525	12.700	15.875	19.050		
	50	57.656	3.161	6.322	9.483	12.644	15.805	18.966		
57	00	69.188	3.147	6.294	9.441	12.588	15.735	18.882		
	10	11.533	3.133	6.266	9.398	12.531	15.664	18.797		
	20	23.066	3.119	6.237	9.356	12.475	15.594	18.712		
	30	34.599	3.104	6.209	9.314	12.418	15.523	18.627		
	40	46.132	3.090	6.181	9.271	12.362	15.452	18.542		
	50	57.666	3.076	6.152	9.229	12.305	15.381	18.457		
58	00	69.199	3.062	6.124	9.186	12.248	15.311	18.373		
	10	11.535	3.048	6.096	9.143	12.191	15.239	18.287		
	20	23.070	3.034	6.067	9.101	12.134	15.168	18.201		
	30	34.605	3.019	6.038	9.058	12.077	15.096	18.115		
	40	46.140	3.005	6.010	9.015	12.020	15.025	18.029		
	50	57.675	2.991	5.981	8.972	11.962	14.953	17.944		
59	00	69.210	2.976	5.953	8.929	11.905	14.882	17.858		
	10	11.537	2.962	5.924	8.885	11.847	14.809	17.771		
	20	23.074	2.947	5.895	8.842	11.790	14.737	17.684		
	30	34.610	2.933	5.866	8.799	11.732	14.665	17.597		
	40	46.147	2.918	5.837	8.755	11.674	14.592	17.510		
	50	57.684	2.904	5.808	8.712	11.616	14.520	17.424		
60	00	69.221	2.890	5.779	8.669	11.558	14.448	17.337		
	10	11.539	2.875	5.750	8.625	11.500	14.375	17.249		
	20	23.077	2.860	5.721	8.581	11.441	14.302	17.162		
	30	34.616	2.846	5.691	8.537	11.383	14.229	17.074		
	40	46.154	2.831	5.662	8.493	11.324	14.156	16.987		
	50	57.698	2.816	5.633	8.450	11.266	14.083	16.899		
61	00	69.232	2.802	5.604	8.406	11.208	14.010	16.811		
	10	11.540	2.787	5.574	8.361	11.148	13.936	16.723		
	20	23.081	2.772	5.545	8.317	11.090	13.862	16.634		
	30	34.621	2.758	5.515	8.273	11.030	13.788	16.546		
	40	46.162	2.743	5.486	8.229	10.972	13.715	16.457		
	50	57.702	2.728	5.456	8.184	10.912	13.641	16.369		
62	00	69.242	2.713	5.427	8.140	10.854	13.567	16.280		
	10	11.542	2.699	5.397	8.096	10.794	13.493	16.191		
	20	23.084	2.684	5.367	8.051	10.734	13.418	16.102		
	30	34.626	2.669	5.337	8.006	10.675	13.344	16.012		
	40	46.168	2.654	5.308	7.961	10.615	13.269	15.923		
	50	57.710	2.639	5.278	7.917	10.556	13.195	15.833		
63	00	69.253	2.624	5.248	7.872	10.496	13.120	15.744		

TABLE 7.—*Coordinates for projection of maps (scale 1:111000)*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel,						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
° ' Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	63°	64°
63 00	69.253	2.624	5.248	7.872	10.496	13.120	15.744			
10	11.544	2.609	5.218	7.827	10.436	13.045	15.654			
20	23.087	2.594	5.188	7.782	10.376	12.970	15.564			
30	34.631	2.579	5.158	7.737	10.316	12.895	15.473			
40	46.175	2.564	5.128	7.692	10.256	12.820	15.383			
50	57.718	2.549	5.098	7.647	10.196	12.745	15.293			
64 00	69.262	2.534	5.068	7.602	10.136	12.670	15.203			
10	11.545	2.519	5.037	7.556	10.075	12.594	15.112			
20	23.091	2.504	5.007	7.511	10.014	12.518	15.022			
30	34.636	2.488	4.977	7.465	9.954	12.442	14.930			
40	46.182	2.473	4.947	7.420	9.893	12.367	14.840			
50	57.727	2.458	4.916	7.374	9.832	12.291	14.749			
65 00	69.272	2.443	4.886	7.329	9.772	12.215	14.658			
10	11.547	2.428	4.855	7.283	9.711	12.139	14.566			
20	23.094	2.412	4.825	7.237	9.650	12.062	14.474			
30	34.641	2.397	4.794	7.191	9.588	11.986	14.383			
40	46.188	2.382	4.764	7.145	9.527	11.909	14.291			
50	57.735	2.366	4.733	7.100	9.466	11.833	14.199			
66 00	69.282	2.351	4.702	7.054	9.405	11.756	14.107			
10	11.548	2.336	4.672	7.007	9.343	11.679	14.015			
20	23.097	2.320	4.641	6.961	9.282	11.602	13.922			
30	34.646	2.305	4.610	6.915	9.220	11.525	13.830			
40	46.194	2.290	4.579	6.869	9.158	11.448	13.738			
50	57.742	2.274	4.548	6.823	9.097	11.371	13.645			
67 00	69.291	2.259	4.518	6.776	9.035	11.294	13.553			
10	11.550	2.243	4.487	6.730	8.973	11.217	13.460			
20	23.100	2.228	4.455	6.683	8.911	11.139	13.366			
30	34.650	2.212	4.424	6.637	8.849	11.061	13.273			
40	46.200	2.197	4.393	6.590	8.787	10.984	13.180			
50	57.750	2.181	4.362	6.543	8.724	10.906	13.087			
68 00	69.300	2.166	4.331	6.497	8.662	10.828	12.994			
10	11.552	2.150	4.300	6.450	8.600	10.750	12.900			
20	23.103	2.134	4.269	6.403	8.538	10.672	12.806			
30	34.654	2.119	4.237	6.356	8.475	10.594	12.712			
40	46.206	2.103	4.206	6.309	8.412	10.516	12.619			
50	57.758	2.088	4.175	6.263	8.350	10.438	12.525			
69 00	69.309	2.072	4.144	6.216	8.288	10.360	12.431			
10	11.553	2.056	4.112	6.169	8.225	10.281	12.337			
20	23.106	2.040	4.081	6.121	8.162	10.202	12.242			
30	34.659	2.025	4.049	6.074	8.099	10.124	12.148			
40	46.212	2.009	4.018	6.027	8.036	10.045	12.054			
50	57.764	1.993	3.986	5.980	7.973	9.966	11.959			
70 00	69.317	1.977	3.955	5.932	7.910	9.888	11.865			

TABLE 7.—*Coordinates for projection of maps (scale  $\frac{1}{33333}$ )*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even-degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	70°	71°
° ' "	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
70 00	69.317	1.977	3.955	5.932	7.910	9.888	11.865			
10	11.554	1.962	3.923	5.885	7.846	9.808	11.770			
20	23.109	1.946	3.892	5.837	7.783	9.729	11.675			
30	34.663	1.930	3.860	5.790	7.720	9.650	11.579			
40	46.217	1.914	3.828	5.742	7.656	9.571	11.485			
50	57.772	1.898	3.796	5.695	7.593	9.491	11.389			
71 00	69.326	1.882	3.765	5.647	7.530	9.412	11.294			
10	11.556	1.866	3.733	5.600	7.466	9.333	11.199			
20	23.111	1.850	3.701	5.552	7.402	9.253	11.103			
30	34.667	1.835	3.669	5.504	7.338	9.173	11.008			
40	46.222	1.819	3.637	5.456	7.275	9.094	10.912			
50	57.778	1.803	3.605	5.408	7.211	9.014	10.816			
72 00	69.334	1.787	3.574	5.360	7.147	8.934	10.721			
10	11.557	1.771	3.542	5.312	7.083	8.854	10.625			
20	23.114	1.755	3.509	5.264	7.019	8.774	10.528			
30	34.670	1.739	3.477	5.216	6.955	8.694	10.432			
40	46.227	1.723	3.445	5.168	6.891	8.614	10.336			
50	57.784	1.707	3.413	5.120	6.826	8.533	10.240			
73 00	69.341	1.691	3.381	5.072	6.762	8.453	10.144			
10	11.558	1.674	3.349	5.024	6.698	8.373	10.047			
20	23.116	1.658	3.317	4.975	6.634	8.292	9.950			
30	34.674	1.642	3.284	4.927	6.569	8.211	9.853			
40	46.232	1.626	3.252	4.878	6.504	8.131	9.757			
50	57.790	1.610	3.220	4.830	6.440	8.050	9.660			
74 00	69.348	1.594	3.188	4.782	6.376	7.970	9.563			
10	11.559	1.578	3.156	4.733	6.311	7.889	9.466			
20	23.118	1.562	3.123	4.685	6.246	7.808	9.369			
30	34.677	1.545	3.091	4.636	6.181	7.727	9.272			
40	46.236	1.529	3.058	4.587	6.116	7.645	9.175			
50	57.796	1.513	3.026	4.539	6.052	7.565	9.077			
75 00	69.355	1.497	2.993	4.490	5.987	7.484	8.980			
10	11.560	1.480	2.961	4.441	5.922	7.402	8.882			
20	23.120	1.464	2.928	4.392	5.856	7.321	8.785			
30	34.681	1.448	2.896	4.344	5.792	7.240	8.687			
40	46.241	1.432	2.863	4.295	5.726	7.158	8.590			
50	57.801	1.415	2.831	4.246	5.661	7.077	8.492			
76 00	69.361	1.399	2.798	4.197	5.596	6.995	8.394			
10	11.561	1.383	2.765	4.148	5.530	6.913	8.296			
20	23.122	1.366	2.733	4.099	5.465	6.832	8.198			
30	34.683	1.350	2.700	4.050	5.400	6.750	8.099			
40	46.244	1.334	2.667	4.001	5.334	6.668	8.002			
50	57.806	1.317	2.634	3.952	5.269	6.586	7.903			
77 00	69.367	1.301	2.602	3.903	5.204	6.505	7.805			



TABLE 7.—*Coordinates for projection of maps (scale  $\frac{1}{33360}$ )*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
° ' "	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	77°	78°
77 00	69.367	1.301	2.602	3.903	5.204	6.505	7.805			
10	11.562	1.284	2.569	3.854	5.138	6.423	7.707			
20	23.124	1.268	2.536	3.804	5.072	6.341	7.609			
30	34.686	1.252	2.503	3.755	5.006	6.258	7.510			
40	46.248	1.235	2.470	3.706	4.941	6.176	7.411			
50	57.810	1.219	2.438	3.656	4.875	6.094	7.313			
78 00	69.373	1.202	2.405	3.607	4.810	6.012	7.214			
10	11.563	1.186	2.372	3.558	4.744	5.930	7.115			
20	23.126	1.169	2.339	3.508	4.678	5.847	7.016			
30	34.689	1.153	2.306	3.459	4.612	5.765	6.918			
40	46.252	1.136	2.273	3.410	4.546	5.683	6.819			
50	57.814	1.120	2.240	3.360	4.480	5.600	6.720			
79 00	69.377	1.104	2.207	3.311	4.414	5.518	6.621			
10	11.564	1.087	2.174	3.261	4.348	5.435	6.522			
20	23.127	1.070	2.141	3.211	4.282	5.352	6.422			
30	34.691	1.054	2.108	3.162	4.216	5.270	6.323			
40	46.255	1.037	2.075	3.112	4.150	5.187	6.224			
50	57.818	1.021	2.042	3.062	4.083	5.104	6.125			
80 00	69.382	1.004	2.009	3.013	4.017	5.022	6.026			
									79°	80°
								5	0.001	0.001
								10	.004	.003
								15	.008	.008
								20	.015	.014
								25	.023	.021
								30	.033	.031
								5	0.001	0.001
								10	.003	.003
								15	.007	.006
								20	.013	.011
								25	.020	.018
								30	.028	.026

TABLE 8.—*Coordinates for projection of maps (scale  $\frac{1}{33355}$ ).*

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		2½' longi- tude.	5' longi- tude.	7½' longi- tude.	10' longi- tude.	12½' longi- tude.	15' longi- tude.	Longi- tude inter- val.	25°	26°
°	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>			
25 00		2.660	5.299	7.949	10.599	13.248	15.898			
05	5.815	2.648	5.296	7.944	10.591	13.239	15.887			
10	11.629	2.646	5.292	7.938	10.584	13.230	15.876			
15	17.444	2.644	5.288	7.933	10.577	13.221	15.865			
20	23.259	2.642	5.285	7.927	10.569	13.212	15.854			
25	29.074	2.641	5.281	7.922	10.562	13.203	15.843			
30	34.888	2.639	5.277	7.916	10.555	13.194	15.832			
35		2.637	5.274	7.911	10.548	13.184	15.821	2½'	<i>Inches.</i>	<i>Inches.</i>
40		2.635	5.270	7.905	10.540	13.175	15.810	5	0.000	0.000
45		2.633	5.266	7.900	10.533	13.166	15.799	7½'	.002	.002
50		2.631	5.263	7.894	10.526	13.157	15.788	10	.004	.004
55		2.630	5.259	7.889	10.518	13.148	15.777	12½'	.007	.007
								15	.010	.010
									.015	.015
26 00		2.628	5.256	7.883	10.511	13.139	15.766			
05	5.816	2.626	5.252	7.878	10.504	13.129	15.755			
10	11.631	2.624	5.248	7.872	10.496	13.120	15.744			
15	17.447	2.622	5.244	7.866	10.489	13.111	15.733			
20	23.262	2.620	5.241	7.861	10.481	13.101	15.721			
25	29.078	2.618	5.237	7.855	10.473	13.092	15.710			
30	34.893	2.617	5.233	7.849	10.466	13.082	15.699			
35		2.615	5.229	7.844	10.458	13.073	15.688	2½'	<i>Inches.</i>	<i>Inches.</i>
40		2.613	5.225	7.838	10.451	13.064	15.678	5	0.000	0.000
45		2.611	5.222	7.833	10.443	13.054	15.665	7½'	.002	.002
50		2.609	5.218	7.827	10.436	13.045	15.654	10	.004	.004
55		2.607	5.214	7.821	10.428	13.035	15.642	12½'	.007	.007
								15	.011	.011
									.015	.015
27 00		2.605	5.210	7.816	10.421	13.026	15.631			
05	5.816	2.603	5.207	7.810	10.413	13.016	15.620			
10	11.633	2.601	5.203	7.804	10.405	13.006	15.608			
15	17.449	2.599	5.199	7.798	10.397	12.997	15.596			
20	23.265	2.597	5.195	7.792	10.389	12.987	15.584			
25	29.082	2.595	5.191	7.786	10.382	12.977	15.572			
30	34.898	2.593	5.187	7.780	10.374	12.967	15.561			
35		2.591	5.183	7.774	10.366	12.957	15.549			
40		2.590	5.179	7.769	10.358	12.948	15.537	2½'	<i>Inches.</i>	<i>Inches.</i>
45		2.588	5.175	7.763	10.350	12.938	15.525	5	0.000	0.000
50		2.586	5.171	7.757	10.342	12.928	15.514	7½'	.002	.002
55		2.584	5.167	7.751	10.335	12.918	15.502	10	.004	.004
								12½'	.007	.007
								15	.011	.011
									.015	.015
28 00		2.582	5.163	7.745	10.327	12.908	15.490			
05	5.817	2.580	5.159	7.739	10.319	12.898	15.478			
10	11.634	2.578	5.155	7.733	10.311	12.888	15.466			
15	17.451	2.576	5.151	7.727	10.303	12.878	15.454			
20	23.268	2.574	5.147	7.721	10.294	12.868	15.442			
25	29.085	2.572	5.143	7.715	10.286	12.858	15.430			
30	34.903	2.570	5.139	7.709	10.278	12.848	15.418			
35		2.568	5.135	7.703	10.270	12.838	15.406			
40		2.566	5.131	7.697	10.262	12.828	15.393	2½'	<i>Inches.</i>	<i>Inches.</i>
45		2.564	5.127	7.691	10.254	12.818	15.381	5	0.000	0.000
50		2.562	5.123	7.685	10.246	12.808	15.369	7½'	.002	.002
55		2.560	5.119	7.679	10.238	12.798	15.357	10	.004	.004
								12½'	.007	.007
								15	.011	.011
									.015	.015
29 00		2.558	5.115	7.673	10.230	12.788	15.345			

**TABLE 8.—Coordinates for projection of maps (scale  $\frac{1}{81,280}$ )—Continued.**

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		2½' longi- tude.	5' longi- tude.	7½' longi- tude.	10' longi- tude.	12½' longi- tude.	15' longi- tude.	Longi- tude inter- val.	29°	30°
°	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>			
29 00	.....	2.568	5.115	7.673	10.230	12.788	15.345			
05	5.818	2.555	5.111	7.666	10.222	12.777	15.333			
10	11.636	2.553	5.107	7.660	10.213	12.767	15.320			
15	17.454	2.551	5.103	7.654	10.205	12.756	15.308			
20	23.272	2.549	5.098	7.648	10.197	12.745	15.295			
25	29.090	2.547	5.094	7.641	10.188	12.735	15.283			
30	34.908	2.545	5.090	7.635	10.180	12.725	15.270			
35	.....	2.543	5.086	7.629	10.172	12.715	15.258			
40	.....	2.541	5.082	7.623	10.164	12.704	15.245			
45	.....	2.539	5.078	7.616	10.155	12.694	15.233			
50	.....	2.537	5.073	7.610	10.147	12.684	15.220			
55	.....	2.535	5.069	7.604	10.138	12.673	15.208			
30 00	.....	2.533	5.065	7.598	10.130	12.663	15.195			
05	5.819	2.530	5.061	7.591	10.122	12.652	15.182			
10	11.638	2.528	5.057	7.585	10.113	12.641	15.169			
15	17.457	2.526	5.052	7.578	10.104	12.630	15.157			
20	23.276	2.524	5.048	7.572	10.096	12.620	15.144			
25	29.095	2.522	5.044	7.565	10.087	12.609	15.131			
30	34.913	2.520	5.039	7.559	10.079	12.598	15.118			
35	.....	2.518	5.035	7.552	10.070	12.587	15.105			
40	.....	2.515	5.031	7.546	10.061	12.577	15.092			
45	.....	2.513	5.026	7.540	10.053	12.566	15.079			
50	.....	2.511	5.022	7.533	10.044	12.555	15.066			
55	.....	2.509	5.018	7.527	10.036	12.544	15.053			
31 00	.....	2.507	5.014	7.520	10.027	12.534	15.040			
05	5.820	2.505	5.009	7.514	10.018	12.523	15.027			
10	11.640	2.502	5.005	7.507	10.009	12.512	15.014			
15	17.460	2.500	5.000	7.500	10.000	12.500	15.000			
20	23.280	2.498	4.996	7.494	9.992	12.489	14.987			
25	29.100	2.496	4.991	7.487	9.983	12.478	14.974			
30	34.919	2.494	4.987	7.480	9.974	12.467	14.961			
35	.....	2.491	4.983	7.474	9.965	12.456	14.948			
40	.....	2.489	4.978	7.467	9.956	12.445	14.934			
45	.....	2.487	4.974	7.460	9.947	12.434	14.921			
50	.....	2.485	4.969	7.454	9.938	12.423	14.908			
55	.....	2.482	4.965	7.447	9.930	12.412	14.894			
32 00	.....	2.480	4.960	7.441	9.921	12.401	14.881			
05	5.821	2.478	4.956	7.434	9.912	12.390	14.868			
10	11.642	2.476	4.951	7.427	9.903	12.378	14.854			
15	17.462	2.473	4.947	7.420	9.894	12.367	14.840			
20	23.283	2.471	4.942	7.413	9.884	12.356	14.827			
25	29.104	2.469	4.938	7.407	9.875	12.344	14.813			
30	34.925	2.467	4.933	7.400	9.866	12.333	14.800			
35	.....	2.464	4.929	7.393	9.857	12.322	14.786			
40	.....	2.462	4.924	7.386	9.848	12.310	14.772			
45	.....	2.460	4.920	7.379	9.839	12.299	14.759			
50	.....	2.458	4.915	7.372	9.831	12.287	14.745			
55	.....	2.455	4.910	7.366	9.821	12.276	14.731			
33 00	.....	2.453	4.906	7.359	9.812	12.265	14.718			

TABLE 8.—*Coordinates for projection of maps (scale 33 $\frac{1}{3}$ :66)*—Continued.

[From Smithsonian (Geographical Tables).]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		2 $\frac{1}{2}$ ' longitude.	5' longitude.	7 $\frac{1}{2}$ ' longitude.	10' longitude.	12 $\frac{1}{2}$ ' longitude.	15' longitude.	Longitude interval.	33°	34°
°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
33 00		2.453	4.906	7.359	9.812	12.265	14.718			
05	5.822	2.451	4.901	7.352	9.802	12.253	14.704			
10	11.643	2.448	4.897	7.345	9.793	12.241	14.690			
15	17.465	2.446	4.892	7.338	9.784	12.230	14.676			
20	23.287	2.444	4.887	7.331	9.774	12.218	14.662			
25	29.109	2.441	4.882	7.324	9.765	12.206	14.648			
30	34.930	2.439	4.878	7.317	9.756	12.195	14.633			
35		2.437	4.873	7.310	9.746	12.183	14.619			
40		2.434	4.868	7.303	9.737	12.171	14.605			
45		2.432	4.864	7.296	9.728	12.160	14.591			
50		2.430	4.859	7.289	9.718	12.148	14.577			
55		2.427	4.854	7.282	9.709	12.136	14.563			
34 00		2.425	4.850	7.275	9.700	12.124	14.549			
05	5.823	2.423	4.845	7.267	9.690	12.112	14.535			
10	11.645	2.420	4.840	7.260	9.680	12.100	14.520			
15	17.468	2.418	4.835	7.253	9.671	12.088	14.506			
20	23.291	2.415	4.831	7.246	9.661	12.076	14.492			
25	29.113	2.413	4.826	7.239	9.652	12.064	14.477			
30	34.936	2.411	4.821	7.231	9.642	12.052	14.463			
35		2.408	4.816	7.224	9.632	12.040	14.448			
40		2.406	4.811	7.217	9.623	12.028	14.434			
45		2.403	4.807	7.210	9.613	12.016	14.420			
50		2.401	4.802	7.203	9.604	12.004	14.405			
55		2.399	4.797	7.195	9.594	11.992	14.391			
35 00		2.396	4.792	7.188	9.584	11.980	14.376			
05	5.824	2.394	4.787	7.181	9.574	11.968	14.362			
10	11.647	2.391	4.782	7.174	9.565	11.956	14.347			
15	17.471	2.389	4.777	7.166	9.555	11.944	14.332			
20	23.294	2.386	4.773	7.159	9.545	11.931	14.318			
25	29.118	2.384	4.768	7.151	9.535	11.919	14.303			
30	34.942	2.381	4.763	7.144	9.525	11.907	14.288			
35		2.379	4.758	7.137	9.516	11.895	14.273			
40		2.376	4.753	7.129	9.506	11.882	14.259			
45		2.374	4.748	7.122	9.496	11.870	14.244			
50		2.372	4.743	7.115	9.486	11.858	14.229			
55		2.369	4.738	7.107	9.476	11.845	14.214			
36 00		2.367	4.733	7.100	9.466	11.833	14.200			
05	5.824	2.364	4.728	7.092	9.456	11.820	14.185			
10	11.649	2.362	4.723	7.085	9.446	11.808	14.169			
15	17.473	2.359	4.718	7.077	9.436	11.795	14.154			
20	23.297	2.357	4.713	7.070	9.426	11.783	14.139			
25	29.122	2.354	4.708	7.062	9.416	11.770	14.124			
30	34.946	2.352	4.703	7.055	9.406	11.758	14.109			
35		2.349	4.698	7.047	9.396	11.745	14.094			
40		2.346	4.693	7.039	9.386	11.732	14.079			
45		2.344	4.688	7.032	9.376	11.720	14.064			
50		2.341	4.683	7.024	9.366	11.707	14.048			
55		2.339	4.678	7.017	9.356	11.694	14.033			
37 00		2.336	4.673	7.009	9.345	11.682	14.018			

TABLE 8.—*Coordinates for projection of maps (scale 1:100,000)*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		2 1/2' longi- tude.	5' longi- tude.	7 1/2' longi- tude.	10' longi- tude.	12 1/2' longi- tude.	15' longi- tude.			
37 00	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	37°	38°
05	5.826	2.336	4.673	7.009	9.345	11.682	14.018			
10	11.651	2.334	4.667	7.001	9.335	11.669	14.003			
15	17.477	2.331	4.662	6.994	9.325	11.656	13.987			
20	23.302	2.326	4.657	6.986	9.314	11.643	13.972			
25	29.128	2.323	4.652	6.978	9.304	11.630	13.956			
30	34.954	2.321	4.647	6.970	9.294	11.617	13.941			
35		2.318	4.637	6.963	9.283	11.604	13.925			
40		2.316	4.631	6.955	9.273	11.591	13.910			
45		2.313	4.626	6.947	9.263	11.578	13.894			
50		2.311	4.621	6.939	9.253	11.566	13.879			
55		2.308	4.616	6.932	9.242	11.553	13.863			
				6.924	9.232	11.540	13.848			
38 00		2.305	4.611	6.916	9.222	11.527	13.832			
05	5.827	2.303	4.606	6.908	9.211	11.514	13.817			
10	11.653	2.300	4.600	6.900	9.201	11.501	13.801			
15	17.480	2.298	4.595	6.892	9.190	11.488	13.785			
20	23.306	2.295	4.590	6.885	9.179	11.474	13.769			
25	29.133	2.292	4.584	6.877	9.169	11.461	13.753			
30	34.960	2.290	4.579	6.869	9.158	11.448	13.737			
35		2.287	4.574	6.861	9.148	11.435	13.722			
40		2.284	4.569	6.853	9.137	11.422	13.706			
45		2.282	4.563	6.845	9.127	11.408	13.690			
50		2.279	4.558	6.837	9.116	11.395	13.674			
55		2.276	4.553	6.829	9.106	11.382	13.658			
39 00		2.274	4.547	6.821	9.095	11.369	13.642			
05	5.828	2.271	4.542	6.813	9.084	11.355	13.626			
10	11.655	2.268	4.537	6.805	9.073	11.342	13.610			
15	17.483	2.266	4.531	6.797	9.063	11.328	13.594			
20	23.310	2.263	4.526	6.789	9.052	11.315	13.578			
25	29.138	2.260	4.521	6.781	9.041	11.301	13.562			
30	34.966	2.258	4.515	6.773	9.030	11.288	13.545			
35		2.255	4.510	6.765	9.020	11.274	13.529			
40		2.252	4.504	6.757	9.009	11.261	13.513			
45		2.250	4.499	6.748	8.998	11.247	13.497			
50		2.247	4.494	6.740	8.987	11.234	13.481			
55		2.244	4.488	6.732	8.976	11.221	13.465			
40 00		2.241	4.483	6.724	8.966	11.207	13.448			
05	5.829	2.239	4.477	6.716	8.955	11.193	13.432			
10	11.657	2.236	4.472	6.708	8.944	11.180	13.415			
15	17.486	2.233	4.466	6.699	8.933	11.166	13.399			
20	23.314	2.230	4.461	6.691	8.922	11.152	13.382			
25	29.143	2.228	4.455	6.683	8.911	11.138	13.366			
30	34.972	2.225	4.450	6.675	8.899	11.124	13.349			
35		2.222	4.444	6.666	8.888	11.111	13.333			
40		2.219	4.439	6.658	8.877	11.097	13.316			
45		2.217	4.433	6.650	8.866	11.083	13.300			
50		2.214	4.428	6.642	8.855	11.069	13.283			
55		2.211	4.422	6.633	8.844	11.056	13.267			
41 00		2.208	4.417	6.625	8.833	11.042	13.250			

TABLE 8.—*Coordinates for projection of maps (scale  $\frac{1}{32,500}$ )*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		2½' longi- tude.	5' longi- tude.	7½' longi- tude.	10' longi- tude.	12½' longi- tude.	15' longi- tude.	Longi- tude inter- val.	41°	42°
°	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>			
41 00	.....	2.208	4.417	6.625	8.833	11.042	13.250			
05	5.830	2.206	4.411	6.617	8.822	11.028	13.233			
10	11.659	2.203	4.406	6.608	8.811	11.014	13.216			
15	17.489	2.200	4.400	6.600	8.800	11.000	13.200			
20	23.319	2.197	4.394	6.591	8.789	10.986	13.183			
25	29.149	2.194	4.389	6.583	8.777	10.972	13.166			
30	34.978	2.192	4.383	6.575	8.766	10.958	13.149			
35	.....	2.189	4.377	6.566	8.755	10.944	13.132	2½'	<i>Inches.</i>	<i>Inches.</i>
40	.....	2.186	4.372	6.558	8.744	10.930	13.115	5	.001	.001
45	.....	2.183	4.366	6.549	8.732	10.916	13.099	7½'	.002	.002
50	.....	2.180	4.361	6.541	8.721	10.902	13.082	10	.005	.005
55	.....	2.178	4.355	6.533	8.710	10.888	13.065	12½'	.008	.008
								15	.013	.013
									.019	.019
42 00	.....	2.175	4.349	6.524	8.699	10.873	13.048			
05	5.831	2.172	4.344	6.515	8.687	10.859	13.031			
10	11.661	2.169	4.338	6.507	8.676	10.845	13.014			
15	17.492	2.166	4.332	6.498	8.664	10.830	12.996			
20	23.323	2.163	4.326	6.490	8.653	10.816	12.979			
25	29.154	2.160	4.321	6.481	8.641	10.802	12.962			
30	34.984	2.158	4.315	6.472	8.630	10.787	12.945	2½'	<i>Inches.</i>	<i>Inches.</i>
35	.....	2.155	4.309	6.464	8.618	10.773	12.928	5	0.001	0.001
40	.....	2.152	4.304	6.455	8.607	10.759	12.910	7½'	.002	.002
45	.....	2.149	4.298	6.447	8.596	10.744	12.893	10	.005	.005
50	.....	2.146	4.292	6.438	8.584	10.730	12.876	12½'	.008	.008
55	.....	2.143	4.286	6.429	8.573	10.716	12.859	15	.013	.013
									.019	.019
43 00	.....	2.140	4.281	6.421	8.561	10.701	12.842			
05	5.832	2.137	4.275	6.412	8.550	10.687	12.824			
10	11.663	2.134	4.269	6.403	8.538	10.672	12.807			
15	17.495	2.132	4.263	6.395	8.526	10.658	12.789			
20	23.327	2.129	4.257	6.386	8.514	10.643	12.772			
25	29.159	2.126	4.251	6.377	8.503	10.628	12.754			
30	34.990	2.123	4.246	6.368	8.491	10.614	12.736			
35	.....	2.120	4.240	6.359	8.479	10.599	12.719			
40	.....	2.117	4.234	6.351	8.468	10.585	12.701			
45	.....	2.114	4.228	6.342	8.456	10.570	12.684	2½'	<i>Inches.</i>	<i>Inches.</i>
50	.....	2.111	4.222	6.333	8.444	10.555	12.666	5	0.001	0.001
55	.....	2.108	4.216	6.324	8.432	10.541	12.649	7½'	.002	.002
								10	.005	.005
								12½'	.008	.008
								15	.013	.013
									.019	.019
44 00	.....	2.105	4.210	6.316	8.421	10.526	12.631			
05	5.833	2.102	4.205	6.307	8.409	10.511	12.613			
10	11.666	2.099	4.199	6.298	8.397	10.496	12.596			
15	17.498	2.096	4.193	6.289	8.385	10.482	12.578			
20	23.331	2.093	4.187	6.280	8.373	10.467	12.560			
25	29.164	2.090	4.181	6.271	8.361	10.452	12.542			
30	34.997	2.087	4.175	6.262	8.350	10.437	12.524			
35	.....	2.084	4.169	6.253	8.338	10.422	12.506			
40	.....	2.081	4.163	6.244	8.326	10.407	12.489	2½'	<i>Inches.</i>	<i>Inches.</i>
45	.....	2.078	4.157	6.235	8.314	10.392	12.471	5	0.001	0.001
50	.....	2.076	4.151	6.227	8.302	10.377	12.453	7½'	.002	.002
55	.....	2.073	4.145	6.218	8.290	10.363	12.435	10	.005	.005
								12½'	.008	.008
								15	.013	.013
									.019	.019
45 00	.....	2.070	4.139	6.209	8.278	10.348	12.417			

TABLE 8.—*Coordinates for projection of maps (scale 1:111,111)*—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		2 1/2' longi- tude.	5' longi- tude.	7 1/2' longi- tude.	10' longi- tude.	12 1/2' lon- gitude.	15' longi- tude.			
°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	45°	46°
45 00	.....	2.070	4.139	6.209	8.278	10.348	12.417			
05	5.834	2.067	4.133	6.200	8.266	10.333	12.399			
10	11.668	2.064	4.127	6.191	8.254	10.318	12.381			
15	17.501	2.061	4.121	6.181	8.242	10.302	12.363			
20	23.335	2.058	4.115	6.172	8.230	10.287	12.345			
25	29.169	2.054	4.109	6.163	8.218	10.272	12.327			
30	35.003	2.051	4.103	6.154	8.206	10.257	12.308			
35	.....	2.048	4.097	6.145	8.194	10.242	12.290			
40	.....	2.045	4.091	6.136	8.181	10.227	12.272			
45	.....	2.042	4.085	6.127	8.169	10.212	12.254			
50	.....	2.039	4.079	6.118	8.157	10.197	12.236			
55	.....	2.036	4.073	6.109	8.145	10.182	12.218			
46 00	.....	2.033	4.067	6.100	8.133	10.166	12.200			
05	5.835	2.030	4.060	6.091	8.121	10.151	12.181			
10	11.670	2.027	4.054	6.081	8.108	10.136	12.163		47°	
15	17.504	2.024	4.048	6.072	8.096	10.120	12.144			
20	23.339	2.021	4.042	6.063	8.084	10.105	12.126			
25	29.174	2.018	4.036	6.054	8.072	10.090	12.107			
30	35.009	2.015	4.030	6.044	8.069	10.074	12.089			
35	.....	2.012	4.023	6.035	8.047	10.059	12.070			
40	.....	2.009	4.017	6.026	8.035	10.043	12.052			
45	.....	2.006	4.011	6.017	8.022	10.028	12.033			
50	.....	2.003	4.005	6.008	8.010	10.013	12.015			
55	.....	1.999	3.999	5.998	7.998	9.997	11.996			
47 00	.....	1.996	3.993	5.989	7.985	9.982	11.978			
05	5.836	1.993	3.986	5.980	7.973	9.966	11.959			
10	11.672	1.990	3.980	5.970	7.960	9.950	11.940			
15	17.508	1.987	3.974	5.961	7.948	9.935	11.922			
20	23.344	1.984	3.968	5.951	7.935	9.919	11.903			
25	29.180	1.981	3.961	5.942	7.923	9.903	11.884			
30	35.015	1.977	3.955	5.933	7.910	9.888	11.865			
35	.....	1.974	3.949	5.923	7.898	9.872	11.846			
40	.....	1.971	3.943	5.914	7.885	9.856	11.828			
45	.....	1.968	3.936	5.904	7.872	9.841	11.809			
50	.....	1.965	3.930	5.895	7.860	9.825	11.790			
55	.....	1.962	3.924	5.886	7.848	9.809	11.771			
48 00	.....	1.959	3.917	5.876	7.835	9.794	11.752			
05	5.837	1.956	3.911	5.867	7.822	9.778	11.733			
10	11.674	1.952	3.905	5.857	7.810	9.763	11.714			
15	17.511	1.949	3.898	5.848	7.797	9.746	11.695			
20	23.348	1.946	3.892	5.838	7.784	9.730	11.676		49°	
25	29.185	1.943	3.886	5.829	7.771	9.714	11.657			
30	35.021	1.940	3.879	5.819	7.759	9.698	11.638			
35	.....	1.937	3.873	5.810	7.746	9.683	11.619			
40	.....	1.933	3.867	5.800	7.733	9.667	11.600			
45	.....	1.930	3.860	5.790	7.721	9.651	11.581			
50	.....	1.927	3.854	5.781	7.708	9.635	11.562			
55	.....	1.924	3.848	5.771	7.695	9.619	11.543			
49 00	.....	1.921	3.841	5.762	7.682	9.603	11.524			
05	5.838	1.917	3.835	5.752	7.670	9.587	11.504			
10	11.676	1.914	3.828	5.742	7.657	9.571	11.485			
15	17.514	1.911	3.822	5.733	7.644	9.555	11.466			
20	23.352	1.908	3.815	5.723	7.631	9.538	11.446		49°	50°
25	29.190	1.905	3.809	5.713	7.618	9.522	11.427			
30	35.027	1.901	3.802	5.704	7.605	9.506	11.407			
35	.....	1.898	3.796	5.694	7.592	9.490	11.388			
40	.....	1.895	3.790	5.684	7.579	9.474	11.369			
45	.....	1.892	3.783	5.675	7.566	9.458	11.349			
50	.....	1.888	3.777	5.665	7.553	9.442	11.330			
55	.....	1.885	3.770	5.655	7.540	9.426	11.311			
50 00	.....	1.882	3.764	5.646	7.528	9.409	11.291			

TABLE 9.—*Coordinates for projection of maps (scale 1:500,000).*

[Prepared by S. S. Gannett.]

Latitude of parallel.	Abcissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'	7½'	10'	15'		
° ' 26 00	<i>Inches.</i> 7.300	<i>Inches.</i> 10.949	<i>Inches.</i> 14.599	<i>Inches.</i> 21.899	' 5	.002
05	.294	.941	.589	.883	7½	.006
07½	.292	.937	.583	.875	10	.009
10	.389	.933	.578	.867	15	.021
15	.284	.926	.568	.852	Latitude interval. Meridional distance.	
20	7.279	10.918	14.557	21.836		
22½	.276	.914	.562	.828		
25	.273	.910	.547	.820		
30	.268	.902	.537	.805		
35	7.263	10.894	14.526	21.789	' 1	<i>Inches.</i> 1.615
37½	.260	.890	.521	.781	2	3.231
40	.258	.886	.515	.773	3	4.846
45	.252	.878	.506	.757	4	6.461
					5	8.077
50	7.247	10.871	14.495	21.742	6	9.692
52½	.245	.867	.489	.734	7	11.308
55	.242	.863	.484	.726	8	12.924
60	.237	.855	.473	.710	9	14.539
					10	16.154
27 00	7.237	10.855	14.473	21.710	Longitude interval. Inch.	
05	.231	.847	.463	.694		
07½	.229	.843	.457	.686		
10	.226	.839	.452	.678		
15	.221	.831	.442	.662		
20	7.215	10.822	14.430	21.645	Latitude interval. Meridional distance.	
22½	.212	.818	.425	.637		
25	.209	.814	.419	.628		
30	.204	.806	.408	.612		
35	7.199	10.798	14.397	21.596		
37½	.196	.793	.392	.587	' 1	<i>Inches.</i> 1.616
40	.193	.789	.386	.579	2	3.232
45	.188	.781	.375	.563	3	4.847
					4	6.463
50	7.182	10.774	14.365	21.547	5	8.078
52½	.180	.769	.359	.539	6	9.694
55	.177	.765	.354	.531	7	11.310
60	.171	.757	.343	.514	8	12.925
					9	14.541
28 00	7.171	10.757	14.343	21.514	10	16.157
05	.166	.749	.332	.498	Longitude interval. Inch.	
07½	.163	.744	.326	.489		
10	.160	.740	.321	.481		
15	.155	.732	.309	.464		
20	7.149	10.724	14.299	21.448		
22½	.147	.720	.293	.440	Latitude interval. Meridional distance.	
25	.144	.715	.287	.431		
30	.138	.707	.276	.414		
35	7.132	10.698	14.265	21.397		
37½	.129	.694	.259	.388	' 1	<i>Inches.</i> 1.616
40	.127	.690	.253	.380	2	3.232
45	.121	.681	.242	.363	3	4.848
					4	6.464
50	7.116	10.673	14.231	21.347	5	8.079
52½	.113	.669	.225	.338	6	9.695
55	.110	.665	.220	.330	7	11.311
60	.104	.656	.209	.213	8	12.927
					9	14.543
					10	16.159



TABLE 9.—*Coordinates for projection of maps (scale  $\frac{1}{35000}$ ).*—Continued.

Latitude of parallel.	Abscissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'	7½'	10'	15'		
29 00	<i>Inches.</i> 7.104	<i>Inches.</i> 10.656	<i>Inches.</i> 14.209	<i>Inches.</i> 21.313	5	.003
05	.099	.648	.197	.296	7½	.006
07½	.096	.643	.191	.287	10	.010
10	.093	.639	.185	.278	15	.023
15	.087	.630	.174	.261		
20	7.081	10.621	14.162	21.243	Latitude interval.	Meridional distance.
22½	.078	.617	.156	.234		
25	.075	.613	.151	.226		
30	.070	.604	.140	.209		
35	7.064	10.596	14.128	21.192	1	1.616
37½	.061	.591	.122	.183	2	3.232
40	.058	.587	.116	.174	3	4.848
45	.052	.578	.105	.157	4	6.464
					5	8.081
					6	9.697
					7	11.313
					8	12.929
50	7.046	10.569	14.093	21.139	9	14.545
52½	.043	.565	.087	.130	10	16.161
55	.041	.561	.081	.122		
60	.035	.552	.069	.104	Longitude interval.	Inch.
30 00	7.035	10.552	14.069	21.104		
05	.029	.543	.057	.086		
07½	.026	.538	.051	.077	5	.003
10	.023	.534	.045	.068	7½	.006
15	.017	.525	.035	.051	10	.010
					15	.023
20	7.011	10.516	14.022	21.033	Latitude interval.	Meridional distance.
22½	.008	.512	.016	.024		
25	.005	.507	.010	.015		
30	6.999	.499	13.999	20.998		
35	6.993	10.490	13.987	20.980	1	1.616
37½	.990	.485	.981	.971	2	3.233
40	.987	.481	.975	.962	3	4.849
45	.982	.472	.963	.945	4	6.465
					5	8.082
					6	9.698
					7	11.314
50	6.976	10.463	13.951	20.927	8	12.931
52½	.973	.459	.945	.918	9	14.547
55	.970	.454	.939	.909	10	16.163
60	.963	.445	.927	.890		
31 00	6.963	10.445	13.927	20.890	Longitude interval.	Inch.
05	.957	.436	.915	.872		
07½	.954	.431	.908	.862		
10	.951	.426	.902	.853	5	.003
15	.945	.417	.890	.835	7½	.006
					10	.011
					15	.024
20	6.939	10.408	13.878	20.817	Latitude interval.	Meridional distance.
22½	.936	.404	.872	.808		
25	.933	.399	.865	.798		
30	.927	.390	.853	.780		
35	6.920	10.380	13.841	20.761	1	1.617
37½	.917	.376	.835	.752	2	3.233
40	.915	.372	.829	.744	3	4.850
45	.908	.362	.817	.725	4	6.467
					5	8.083
					6	9.700
					7	11.317
50	6.902	10.353	13.804	20.706	8	12.932
52½	.899	.348	.797	.696	9	14.549
55	.896	.344	.792	.688	10	16.166
60	.890	.334	.779	.669		

TABLE 9.—*Coordinates for projection of maps (scale 1:50000)*—Continued.

Latitude of parallel.	Abscissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'	7½'	10'	15'		
° /	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		
32 00	6.890	10.334	13.779	20.669	5	.003
05	.883	.325	.767	.650	7½	.006
07½	.880	.320	.760	.640	10	.011
10	.877	.315	.754	.631	15	.024
15	.871	.306	.742	.612		
					Latitude interval.	*Meridional distance.
20	6.864	10.296	13.729	20.593		
22½	.861	.291	.722	.583		
25	.858	.287	.716	.574		
30	.852	.277	.703	.555		
					1	1.617
					2	3.234
					3	4.851
35	6.845	10.268	13.691	20.536	4	6.468
37½	.842	.263	.684	.526	5	8.085
40	.839	.258	.678	.517	6	9.702
45	.833	.249	.665	.498	7	11.319
					8	12.935
					9	14.552
					10	16.169
					Longitude interval.	Inch.
33 00	6.814	10.220	13.627	20.441		
05	.807	.210	.614	.421	5	.003
07½	.804	.205	.607	.411	7½	.006
10	.801	.201	.601	.402	10	.011
15	.794	.191	.588	.382	15	.024
					Latitude interval.	Meridional distance.
20	6.788	10.181	13.575	20.363		
22½	.784	.176	.569	.353		
25	.781	.171	.562	.343		
30	.775	.162	.549	.324		
					1	1.617
					2	3.234
					3	4.852
35	6.768	10.152	13.536	20.304	4	6.469
37½	.765	.147	.529	.294	5	8.086
40	.762	.142	.523	.285	6	9.703
45	.755	.132	.510	.265	7	11.321
					8	12.938
					9	14.555
					10	16.172
					Longitude interval.	Inch.
34 00	6.736	10.103	13.471	20.207		
05	.729	.093	.458	.187		
07½	.726	.088	.451	.177	5	.003
10	.722	.083	.445	.167	7½	.006
15	.716	.073	.431	.147	10	.011
					15	.025
					Latitude interval.	Meridional distance.
20	6.709	10.063	13.418	20.127		
22½	.706	.058	.411	.117		
25	.702	.053	.405	.107		
30	.696	.043	.391	.087		
					1	1.617
					2	3.235
					3	4.852
35	6.689	10.033	13.378	20.067	4	6.469
37½	.686	.028	.371	.057	5	8.087
40	.682	.023	.365	.047	6	9.705
45	.676	.013	.351	.027	7	11.322
					8	12.938
					9	14.557
					10	16.174
50	6.669	10.003	13.338	20.007		
52½	.666	.998	.331	.997		
55	.662	.993	.325	.987		
60	.656	.983	.311	.967		

TABLE 9.—*Coordinates for projection of maps (scale,  $\frac{1}{15500}$ )—Continued.*

Latitude of parallel.	Abscissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'	7½'	10'	15'		
35 00	<i>Inches.</i> 6.656	<i>Inches.</i> 9.983	<i>Inches.</i> 13.311	<i>Inches.</i> 19.967	5	.003
05	.649	.973	.298	.947	7½	.006
07½	.645	.968	.291	.936	10	.011
10	.642	.963	.284	.926	15	.025
15	.635	.953	.271	.906		
20	6.628	9.942	13.257	19.885	Latitude interval.	Meridional distance.
22½	.625	.937	.250	.875		
25	.622	.932	.243	.865		
30	.615	.922	.230	.845		
35	6.608	9.912	13.216	19.824	1	1.618
37½	.605	.907	.209	.814	2	3.236
40	.601	.902	.203	.804	3	4.853
45	.594	.891	.189	.783	4	6.471
					5	8.089
50	6.588	9.881	13.175	19.763	6	9.706
52½	.584	.876	.169	.753	7	11.324
55	.581	.871	.161	.742	8	12.942
60	.574	.861	.148	.722	9	14.560
					10	16.178
36 00	6.574	9.861	13.148	19.722	Longitude interval.	Inch.
05	.567	.850	.134	.701		
07½	.564	.845	.127	.691	5	.003
10	.560	.840	.120	.680	7½	.006
15	.553	.829	.106	.659	10	.011
					15	.025
20	6.546	9.819	13.092	19.638	Latitude interval.	Meridional distance.
22½	.543	.814	.089	.628		
25	.539	.808	.078	.617		
30	.532	.799	.064	.596		
35	6.525	9.787	13.050	19.575	1	1.618
37½	.522	.782	.044	.565	2	3.236
40	.518	.777	.036	.554	3	4.854
45	.511	.766	.022	.533	4	6.472
					5	8.090
50	6.504	9.756	13.008	19.512	6	9.708
52½	.501	.751	.001	.502	7	11.326
55	.497	.745	.000	.491	8	12.944
60	.490	.735	.000	.470	9	14.562
					10	16.180
37 00	6.490	9.735	12.980	19.470	Longitude interval.	Inch.
05	.483	.724	.965	.448		
07½	.479	.718	.958	.437	5	.003
10	.476	.713	.951	.427	7½	.007
15	.468	.702	.937	.405	10	.012
					15	.026
20	6.461	9.691	12.922	19.383	Latitude interval.	Meridional distance.
22½	.458	.686	.915	.373		
25	.454	.681	.908	.362		
30	.447	.670	.893	.340		
35	6.440	9.659	12.879	19.319	1	1.618
37½	.436	.654	.872	.308	2	3.236
40	.433	.649	.865	.298	3	4.855
45	.425	.638	.851	.276	4	6.473
					5	8.091
50	6.418	9.627	12.836	19.254	6	9.709
52½	.415	.622	.829	.244	7	11.328
55	.411	.616	.822	.233	8	12.946
60	.404	.605	.808	.211	9	14.564
					10	16.182

TABLE 9.—*Coordinates for projection of maps (scale  $\frac{1}{50000}$ )—Continued.*

Latitude of parallel.	Abcissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'	7½'	10'	15'		
38 00	<i>Inches.</i> 6.404	<i>Inches.</i> 9.605	<i>Inches.</i> 12.808	<i>Inches.</i> 19.211	5	.003
05	.396	.594	.792	.189	7½	.007
07½	.393	.589	.786	.178	10	.012
10	.389	.584	.778	.168	15	.026
15	.382	.573	.764	.146		
					Latitude interval.	Meridional distance.
20	6.375	9.562	12.750	19.124	1	<i>Inches.</i> 1.619
22½	.371	.556	.742	.112	2	3.237
25	.367	.551	.734	.102	3	4.856
30	.360	.540	.720	.080	4	6.475
					5	8.093
35	6.353	9.529	12.706	19.058	6	9.712
37½	.349	.523	.698	.047	7	11.331
40	.346	.518	.692	.037	8	12.949
45	.338	.507	.676	.014	9	14.567
					10	16.186
50	6.331	9.496	12.662	18.992		
52½	.327	.491	.654	.982	Longitude interval.	Inch.
55	.324	.485	.648	.791	5	.003
60	.316	.474	.631	.948	7½	.007
					10	.012
					15	.026
39 00	6.316	9.474	12.632	18.948		
05	.309	.463	.617	.926	Latitude interval.	Meridional distance.
07½	.305	.457	.609	.914	1	<i>Inches.</i> 1.619
10	.301	.451	.602	.903	2	3.237
15	.294	.440	.587	.881	3	4.856
					4	6.475
20	6.286	9.429	12.572	18.858	5	8.094
22½	.282	.423	.565	.847	6	9.712
25	.279	.418	.557	.836	7	11.331
30	.271	.406	.542	.813	8	12.950
					9	14.569
35	6.264	9.395	12.527	18.791	10	16.188
37½	.260	.389	.520	.780		
40	.256	.384	.512	.768	Longitude interval.	Inch.
45	.249	.373	.497	.746	5	.003
					7½	.007
50	6.241	9.361	12.482	18.723	10	.012
52½	.237	.356	.475	.712	15	.026
55	.234	.350	.467	.701		
60	.226	.339	.452	.678	Latitude interval.	Meridional distance.
40 00	6.226	9.339	12.452	18.678	1	<i>Inches.</i> 1.619
05	.219	.328	.438	.656	2	3.238
07½	.215	.322	.429	.644	3	4.857
10	.211	.316	.422	.635	4	6.476
15	.203	.305	.406	.609	5	8.095
					6	9.714
20	6.196	9.293	12.392	18.567	7	11.333
22½	.192	.288	.384	.576	8	12.952
25	.188	.282	.376	.564	9	14.571
30	.180	.270	.361	.540	10	16.190
35	6.173	9.259	12.346	18.518		
37½	.169	.253	.338	.506	Longitude interval.	Inch.
40	.165	.247	.330	.495	5	.003
45	.157	.236	.315	.472	7½	.007
					10	.012
50	6.150	9.224	12.300	18.449	15	.026
52½	.146	.219	.292	.438		
55	.142	.213	.285	.427	Latitude interval.	Meridional distance.
60	.134	.201	.269	.403	1	<i>Inches.</i> 1.619
					2	3.238
					3	4.857
					4	6.476
					5	8.095
					6	9.714
					7	11.333
					8	12.952
					9	14.571
					10	16.190

TABLE 9.—Coordinates for projection of maps (scale  $\frac{1}{15000}$ )—Continued.

Latitude of parallel.	Abscissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'	7½'	10'	15'		
41 00	<i>Inches.</i> 6.134	<i>Inches.</i> 9.201	<i>Inches.</i> 12.269	<i>Inches.</i> 18.403	' 5	.003
05	.127	.190	.254	.380	7½	.007
07½	.123	.184	.246	.368	10	.012
10	.119	.178	.238	.356	15	.026
15	.111	.166	.222	.333		
20	6.103	9.155	12.206	18.310	Latitude interval.	Meridi- onal distance.
22½	.099	.149	.198	.298	' 1	<i>Inches.</i> 1.619
25	.095	.143	.190	.286	2	3.239
30	.087	.131	.175	.263	3	4.858
35	6.080	9.119	12.159	18.239	4	6.477
37½	.076	.113	.162	.227	5	8.097
40	.072	.107	.143	.215	6	9.716
45	.064	.096	.128	.192	7	11.335
50	6.056	9.084	12.113	18.169	8	12.955
52½	.052	.078	.135	.157	9	14.574
55	.048	.072	.096	.145	10	16.193
60	.041	.061	.081	.122	Longitude interval.	Inch.
42 00	6.041	9.361	12.081	18.122	' 5	.003
05	.033	.049	.066	.098	7½	.007
07½	.029	.043	.057	.086	10	.012
10	.025	.037	.050	.074	15	.026
15	.017	.025	.034	.051		
20	6.009	9.013	12.018	18.027	Latitude interval.	Meridi- onal distance.
22½	.005	.007	.010	.015	' 1	<i>Inches.</i> 1.620
25	.001	.001	.002	.003	2	3.239
30	5.993	8.989	11.986	17.979	3	4.859
35	5.985	8.978	11.970	17.956	4	6.478
37½	.981	.971	.963	.944	5	8.098
40	.977	.966	.955	.932	6	9.718
45	.969	.954	.939	.908	7	11.337
50	5.961	8.942	11.923	17.884	8	12.957
52½	.957	.936	.915	.872	9	14.576
55	.953	.930	.907	.861	10	16.196
60	.945	.918	.891	.836	Longitude interval.	Inch.
43 00	5.945	8.918	11.891	17.836	' 5	.003
05	.937	.906	.875	.812	7½	.007
07½	.933	.900	.868	.800	10	.012
10	.929	.893	.858	.787	15	.026
15	.921	.881	.842	.763		
20	5.913	8.869	11.825	17.788	Latitude interval.	Meridi- onal distance.
22½	.909	.863	.817	.726	' 1	<i>Inches.</i> 1.620
25	.905	.857	.809	.714	2	3.240
30	.896	.844	.793	.689	3	4.860
35	5.888	8.832	11.777	17.665	4	6.480
37½	.884	.826	.769	.653	5	8.100
40	.880	.820	.760	.640	6	9.719
45	.872	.808	.744	.616	7	11.339
50	5.864	8.796	11.728	17.592	8	12.959
52½	.860	.790	.720	.580	9	14.579
55	.856	.783	.711	.567	10	16.199
60	.848	.771	.695	.543		

TABLE 9.—*Coordinates for projection of maps (scale  $\frac{1}{15000}$ )*—Continued.

Latitude of parallel.	Abscissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'.	7½'.	10'.	15'.		
°	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	'	
44 00	5.848	8.771	11.695	17.543	5	.003
05	.839	.759	.679	.518	7½	.007
07½	.835	.753	.670	.505	10	.012
10	.831	.746	.662	.493	15	.027
15	.823	.734	.646	.469		
					Latitude interval.	Meridional distance.
20	5.815	8.722	11.629	17.444		
22½	.810	.715	.621	.431	'	<i>Inches.</i>
25	.806	.709	.613	.419	1	1.620
30	.798	.697	.596	.394	2	3.240
					3	4.861
35	5.790	8.685	11.580	17.370	4	6.481
37½	.786	.678	.571	.357	5	8.101
40	.782	.672	.563	.345	6	9.721
45	.773	.660	.547	.320	7	11.341
					8	12.962
50	5.765	8.647	11.530	17.295	9	14.582
52½	.761	.641	.523	.284	10	16.202
55	.757	.635	.514	.271		
60	.749	.623	.497	.246	Longitude interval.	Inch.
					'	
45 00	5.749	8.623	11.497	17.246	5	.003
05	.740	.610	.481	.221	7½	.007
07½	.736	.604	.472	.208	10	.012
10	.732	.598	.464	.196	15	.027
15	.724	.585	.447	.171		
					Latitude interval.	Meridional distance.
20	5.715	8.573	11.431	17.146		
22½	.711	.567	.423	.134	'	<i>Inches.</i>
25	.707	.560	.414	.121	1	1.621
30	.699	.548	.397	.096	2	3.241
					3	4.862
35	5.690	8.535	11.380	17.070	4	6.483
37½	.686	.528	.371	.057	5	8.103
40	.682	.522	.363	.045	6	9.723
45	.673	.510	.347	.020	7	11.345
					8	12.964
50	5.665	8.497	11.330	16.995	9	14.585
52½	.661	.491	.321	.982	10	16.206
55	.657	.485	.313	.970		
60	.648	.472	.296	.944	Longitude interval.	Inch.
					'	
46 00	5.648	8.472	11.296	16.944	5	.003
05	.639	.459	.278	.918	7½	.007
07½	.635	.453	.271	.906	10	.012
10	.631	.446	.262	.893	15	.027
15	.622	.433	.245	.867		
					Latitude interval.	Meridional distance.
20	5.614	8.420	11.227	16.841		
22½	.609	.414	.219	.828	'	<i>Inches.</i>
25	.605	.408	.211	.816	1	1.621
30	.597	.395	.193	.790	2	3.242
					3	4.863
35	5.588	8.382	11.176	16.764	4	6.484
37½	.584	.376	.167	.751	5	8.105
40	.579	.369	.159	.738	6	9.725
45	.571	.356	.142	.713	7	11.347
					8	12.968
50	5.562	8.343	11.125	16.687	9	14.588
52½	.558	.337	.117	.675	10	16.209
55	.554	.330	.107	.661		
60	.545	.318	.091	.636		

TABLE 9.—Coordinates for projection of maps (scale 1:5000)—Continued.

Latitude of parallel.	Abscissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'.	7½'.	10'.	15'.		
47 00	<i>Inches.</i> 5.545	<i>Inches.</i> 8.318	<i>Inches.</i> 11.091	<i>Inches.</i> 16.636	' 5	.003
05	.537	.305	.073	.610	7½	.007
07½	.532	.298	.065	.597	10	.012
10	.528	.292	.056	.584	15	.026
15	.519	.279	.039	.558		
					Latitude interval.	Meridional distance.
20	5.510	8.265	11.021	16.531	' 1	1.621
22½	.506	.259	.012	.518	2	3.242
25	.502	.252	.008	.505	3	4.863
30	.493	.239	10.986	.479	4	6.484
					5	8.105
35	5.484	8.226	10.979	16.453	6	9.726
37½	.480	.220	.960	.440	7	11.348
40	.476	.213	.951	.427	8	12.969
45	.467	.200	.934	.401	9	14.590
					10	16.211
50	5.458	8.187	10.916	16.374		
52½	.454	.181	.908	.362	Longitude interval.	Inch.
55	.449	.174	.899	.348	' 5	.003
60	.441	.161	.882	.323	7½	.007
					10	.012
48 00	5.441	8.161	10.882	16.323	15	.026
05	.432	.148	.865	.297		
07½	.428	.142	.856	.284	Latitude interval.	Meridional distance.
10	.424	.135	.847	.271	' 1	1.621
15	.415	.122	.830	.245	2	3.242
					3	4.864
20	5.406	8.108	10.811	16.217	4	6.485
22½	.401	.102	.803	.204	5	8.107
25	.397	.095	.794	.191	6	9.728
30	.388	.082	.777	.165	7	11.349
					8	12.971
35	5.380	8.069	10.759	16.139	9	14.592
37½	.375	.062	.750	.125	10	16.213
40	.370	.055	.741	.111		
45	.362	.042	.723	.085	Longitude interval.	Inch.
					' 5	.003
50	5.353	8.029	10.706	16.059	7½	.007
52½	.349	.023	.697	.046	10	.012
55	.344	.016	.689	.033	15	.026
60	.335	.002	.670	.005		
49 00	5.335	8.002	10.670	16.005	Latitude interval.	Meridional distance.
05	.326	.7.989	.652	15.978	' 1	1.622
07½	.322	.982	.643	.965	2	3.243
10	.317	.976	.635	.952	3	4.865
15	.308	.962	.616	.924	4	6.486
					5	8.108
20	5.299	7.948	10.598	15.897	6	9.730
22½	.295	.942	.590	.885	7	11.351
25	.291	.936	.581	.872	8	12.972
30	.282	.922	.563	.845	9	14.594
					10	16.216
35	5.272	7.908	10.545	15.817		
37½	.268	.902	.536	.804	Longitude interval.	Inch.
40	.264	.896	.527	.791	' 5	.003
45	.255	.882	.509	.764	7½	.007
					10	.012
50	5.246	7.868	10.491	15.737	15	.026
52½	.241	.862	.482	.723		
55	.237	.855	.473	.710	Latitude interval.	Meridional distance.
60	.227	.841	.455	.682	' 1	1.622
					2	3.243
					3	4.865
					4	6.486
					5	8.108
					6	9.730
					7	11.351
					8	12.972
					9	14.594
					10	16.216

TABLE 10.—*Coordinates for the projection of maps (scale 1:2000).*

[Prepared by S. S. Gannett and George T. Hawkins.]

Latitude of parallel.	Abscissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		
25 00	5.520	11.040	16.560	22.080	27.600	1	.000
05	.516	.032	.549	.065	.581	2	.002
07½	.515	.029	.544	.057	.572	3	.003
10	.512	.025	.538	.050	.562	4	.006
15	.509	.018	.528	.035	.544	5	.009
20	5.505	11.010	16.515	22.020	27.525	Latitude interval.	Meridional distance.
22½	.503	.006	.509	.012	.516		
25	.501	.002	.503	.005	.506		
30	.497	10.995	.492	21.990	.487		
35	5.494	10.988	16.480	21.975	27.468		<i>Inches.</i>
37½	.492	.984	.476	.968	.459	1	6.057
40	.490	.980	.470	.960	.449	2	12.114
45	.486	.972	.458	.945	.430	3	18.171
						4	24.228
						5	30.285
50	5.482	10.965	16.448	21.930	27.411	Longitude interval.	Inch.
52½	.480	.961	.441	.921	.401		
55	.478	.957	.435	.915	.392		
60	.475	.950	.424	.900	.373		
26 00	5.475	10.950	16.424	21.900	27.373		
05	.470	.942	.412	.882	.353	1	.000
07½	.469	.937	.406	.875	.343	2	.002
10	.467	.933	.400	.867	.333	3	.003
15	.463	.925	.389	.852	.314	4	.006
						5	.009
20	5.459	10.918	16.377	21.835	27.294	Latitude interval.	Meridional distance.
22½	.457	.914	.371	.828	.284		
25	.455	.910	.365	.820	.275		
30	.451	.902	.353	.805	.255		
35	5.447	10.894	16.341	21.789	27.235		<i>Inches.</i>
37½	.445	.890	.335	.790	.225	1	6.058
40	.443	.887	.330	.773	.216	2	12.115
45	.439	.878	.318	.758	.196	3	18.173
						4	24.231
						5	30.289
50	5.435	10.870	16.306	21.741	27.176	Longitude interval.	Inch.
52½	.433	.866	.298	.732	.167		
55	.431	.863	.294	.725	.157		
60	.428	.855	.282	.710	.138		
27 00	5.428	10.856	16.283	21.710	27.138		
05	.422	.848	.270	.695	.118	1	.000
07½	.421	.843	.264	.686	.108	2	.002
10	.420	.839	.258	.678	.097	3	.003
15	.415	.831	.247	.662	.077	4	.006
						5	.010
20	5.410	10.822	16.233	21.645	27.066	Latitude interval.	Meridional distance.
22½	.409	.818	.227	.636	.046		
25	.407	.815	.220	.628	.035		
30	.403	.806	.210	.612	.015		
35	5.399	10.798	16.198	21.595	26.995		<i>Inches.</i>
37½	.397	.794	.191	.588	.984	1	6.058
40	.395	.790	.185	.580	.974	2	12.117
45	.391	.782	.172	.562	.953	3	18.175
						4	24.235
						5	30.292
50	5.387	10.774	16.160	21.548	26.933	Longitude interval.	Inch.
52½	.384	.768	.154	.538	.922		
55	.382	.765	.148	.530	.912		
60	.378	.758	.135	.515	.892		



TABLE 10.—*Coordinates for the projection of maps (scale  $\frac{1}{11000}$ )—Continued.*

Latitude of parallel.	Abscissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
<i>° ' "</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>'</i>	<i>Inches.</i>
28 00	5.378	10.758	16.135	21.515	26.892	1	.000
05	.374	.749	.122	.498	.871	2	.002
07½	.372	.745	.116	.488	.861	3	.003
10	.370	.740	.110	.480	.850	4	.006
15	.366	.732	.098	.465	.830	5	.010
20	5.362	10.724	16.085	21.448	26.810	Latitude interval.	Meridional distance.
22½	.360	.720	.078	.439	.799		
25	.358	.715	.072	.430	.789		
30	.354	.708	.060	.415	.768		
35	5.349	10.698	16.048	21.398	26.746		
37½	.347	.694	.041	.388	.735	1	6.060
40	.345	.690	.035	.380	.725	2	12.120
45	.341	.682	.022	.362	.703	3	18.178
						4	24.238
						5	30.298
50	5.336	10.673	16.010	21.348	26.683	Longitude interval.	Inch.
52½	.334	.668	.004	.339	.672		
55	.332	.665	.000	.330	.662		
60	.328	.657	.985	.312	.640		
29 00	5.328	10.657	15.985	21.312	26.640	1	.000
05	.324	.648	.971	.295	.619	2	.002
07½	.322	.643	.965	.287	.608	3	.003
10	.320	.640	.958	.278	.598	4	.006
15	.315	.630	.945	.260	.575	5	.010
20	5.310	10.621	15.932	21.242	26.553	Latitude interval.	Meridional distance.
22½	.308	.617	.925	.234	.542		
25	.306	.612	.920	.225	.532		
30	.302	.605	.907	.209	.511		
35	5.298	10.596	15.894	21.192	26.490		
37½	.295	.591	.886	.183	.478	1	6.060
40	.294	.587	.880	.174	.468	2	12.121
45	.289	.578	.867	.156	.445	3	18.182
						4	24.242
						5	30.302
50	5.284	10.569	15.853	21.137	26.422	Longitude interval.	Inch.
52½	.282	.565	.847	.130	.412		
55	.280	.560	.841	.121	.401		
60	.275	.552	.828	.104	.380		
30 00	5.275	10.552	15.828	21.104	26.380	1	.000
05	.272	.543	.815	.086	.358	2	.002
07½	.269	.538	.808	.077	.346	3	.003
10	.267	.534	.801	.068	.335	4	.006
15	.262	.525	.787	.050	.312	5	.010
20	5.258	10.516	15.774	21.032	26.290	Latitude interval.	Meridional distance.
22½	.256	.512	.768	.024	.280		
25	.254	.507	.760	.014	.268		
30	.249	.499	.748	.000	.247		
35	5.245	10.490	15.735	20.980	26.225		
37½	.243	.485	.728	.971	.213	1	6.061
40	.240	.480	.721	.961	.202	2	12.122
45	.236	.472	.708	.944	.180	3	18.183
						4	24.245
						5	30.305
50	5.232	10.463	15.695	20.927	26.159		
52½	.229	.459	.688	.918	.147		
55	.227	.454	.681	.908	.135		
60	.222	.445	.667	.890	.112		

TABLE 10.—*Coordinates for the projection of maps (scale  $\frac{1}{112500}$ )—Continued.*

Latitude of parallel.	Abscissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>1</i>	
31 00	5.222	10.445	15.667	20.890	26.112	1	.000
05	.218	.435	.654	.872	.089	2	.002
07½	.216	.432	.647	.863	.079	3	.003
10	.213	.426	.640	.853	.066	4	.006
15	.209	.417	.626	.834	.043	5	.010
20	5.204	10.408	15.613	20.817	26.021	Latitude interval. Meridional distance.	
22½	.202	.404	.605	.807	.009		
25	.200	.400	.598	.798	25.998		
30	.195	.390	.585	.780	.975		
35	5.190	10.381	15.571	20.762	25.952	<i>1</i>	<i>Inches.</i>
37½	.188	.376	.565	.753	.941	1	6.062
40	.186	.372	.557	.743	.929	2	12.124
45	.181	.362	.544	.725	.906	3	18.187
						4	24.249
						5	30.311
50	5.177	10.353	15.530	20.706	25.883	Longitude interval. Inch.	
52½	.174	.348	.523	.697	.871		
55	.172	.344	.516	.688	.860		
60	.167	.334	.502	.669	.836		
32 00	5.167	10.334	15.502	20.669	25.836	<i>1</i>	
05	.162	.325	.487	.650	.812	1	.000
07½	.160	.320	.480	.640	.800	2	.002
10	.158	.315	.473	.630	.788	3	.003
15	.153	.305	.458	.611	.764	4	.007
						5	.010
20	5.148	10.296	15.444	20.592	25.740	Latitude interval. Meridional distance.	
22½	.146	.291	.437	.582	.728		
25	.143	.286	.430	.573	.716		
30	.139	.277	.416	.554	.693		
35	5.134	10.268	15.401	20.535	25.669	<i>1</i>	<i>Inches.</i>
37½	.131	.263	.394	.526	.659	1	6.063
40	.129	.258	.387	.516	.645	2	12.127
45	.124	.249	.373	.498	.622	3	18.190
						4	24.254
						5	30.317
50	5.120	10.239	15.359	20.478	25.598	Longitude interval. Inch.	
52½	.117	.234	.352	.469	.586		
55	.115	.229	.344	.459	.574		
60	.110	.220	.330	.440	.550		
33 00	5.110	10.220	15.330	20.440	25.550	<i>1</i>	
05	.105	.210	.316	.421	.526	1	.000
07½	.103	.206	.308	.411	.514	2	.002
10	.100	.201	.301	.402	.502	3	.003
15	.096	.191	.287	.382	.478	4	.007
						5	.010
20	5.091	10.182	15.272	20.363	25.454	Latitude interval. Meridional distance.	
22½	.088	.176	.264	.352	.440		
25	.086	.171	.257	.342	.428		
30	.081	.162	.242	.323	.404		
35	5.076	10.152	15.228	20.304	25.380	<i>1</i>	<i>Inches.</i>
37½	.074	.147	.220	.294	.368	1	6.065
40	.071	.143	.213	.285	.356	2	12.129
45	.066	.132	.199	.265	.331	3	18.193
						4	24.258
						5	30.322
50	5.061	10.123	15.184	20.246	25.307	Longitude interval. Inch.	
52½	.059	.118	.177	.236	.295		
55	.056	.113	.169	.226	.282		
60	.052	.103	.155	.206	.258		

TABLE 10.—Coordinates for the projection of maps (scale 1:100,000)—Continued.

Latitude of parallel.	Abscissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		
34 00	5.052	10.103	15.155	20.206	25.258	1	.000
05	.047	.093	.140	.186	.233	2	.002
07 1	.044	.089	.132	.176	.220	3	.005
10	.042	.083	.125	.166	.208	4	.007
15	.037	.073	.110	.146	.183	5	.010
20	5.032	10.063	15.095	20.126	25.158	Latitude interval.	Meridional distance.
22 1	.029	.058	.087	.116	.145		
25	.027	.053	.080	.106	.133		
30	.022	.043	.065	.086	.108		
35	5.017	10.033	15.050	20.066	25.083		
37 1	.014	.028	.042	.056	.070	1	<i>Inches.</i> 6.065
40	.012	.023	.035	.046	.058	2	12.130
45	.007	.013	.020	.026	.033	3	18.198
						4	24.262
						5	30.323
50	5.002	10.003	15.005	20.006	25.008	Longitude interval.	Inch.
52 1	4.999	9.998	14.997	19.996	24.995		
55	.997	.993	.990	.986	.983		
60	.992	.983	.975	.966	.958		
35 00	4.992	9.983	14.975	19.966	24.958		
05	.987	.973	.960	.947	.933	1	.000
07 1	.984	.968	.952	.936	.920	2	.002
10	.982	.963	.945	.926	.908	3	.003
15	.976	.953	.929	.906	.882	4	.007
						5	.010
20	4.971	9.942	14.913	19.885	24.856	Latitude interval.	Meridional distance.
22 1	.969	.937	.906	.874	.843		
25	.966	.932	.898	.864	.830		
30	.961	.922	.883	.844	.805		
35	4.956	9.912	14.868	19.824	24.780		
37 1	.953	.907	.860	.814	.767	1	<i>Inches.</i> 6.067
40	.951	.902	.853	.805	.754	2	12.133
45	.946	.891	.837	.783	.728	3	18.200
						4	24.266
						5	30.333
50	4.940	9.881	14.821	19.762	24.702	Longitude interval.	Inch.
52 1	.938	.876	.814	.752	.690		
55	.935	.871	.806	.742	.677		
60	.930	.861	.791	.722	.652		
36 00	4.930	9.861	14.791	19.722	24.652		
05	.925	.850	.776	.701	.626	1	.000
07 1	.923	.845	.768	.690	.613	2	.002
10	.920	.840	.760	.680	.600	3	.005
15	.915	.830	.745	.660	.574	4	.007
						5	.010
20	4.910	9.819	14.719	19.638	24.548	Latitude interval.	Meridional distance.
22 1	.907	.814	.721	.628	.535		
25	.904	.808	.712	.617	.521		
30	.899	.798	.697	.596	.495		
35	4.894	9.787	14.681	19.574	24.468		
37 1	.891	.782	.673	.564	.455	1	<i>Inches.</i> 6.067
40	.888	.777	.665	.554	.442	2	12.135
45	.883	.766	.649	.532	.415	3	18.202
						4	24.269
						5	30.336
50	4.878	9.756	14.633	19.512	24.389	Longitude interval.	Inch.
52 1	.875	.750	.626	.501	.376		
55	.873	.745	.618	.490	.363		
60	.869	.735	.603	.470	.338		

TABLE 10.—*Coordinates for the projection of maps (scale 1:250,000)*—Continued.

Latitude of parallel.	Abscissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'. Inches.	2'. Inches.	3'. Inches.	4'. Inches.	5'. Inches.		
37 00	4.868	9.735	14.603	19.470	24.338	1	.000
05	.862	.724	.586	.448	.310	2	.002
07½	.859	.718	.578	.437	.296	3	.005
10	.856	.713	.569	.426	.282	4	.007
15	.851	.702	.553	.404	.255	5	.010
20	4.846	9.691	14.537	19.382	24.228	Latitude interval.	Meridional distance.
22½	.843	.686	.529	.372	.215		
25	.840	.680	.521	.362	.202		
30	.835	.670	.505	.340	.175		
35	4.830	9.659	14.489	19.318	24.148	1	Inches. 6.068
37½	.827	.654	.481	.308	.135	2	12.136
40	.824	.649	.473	.298	.122	3	18.205
45	.819	.638	.457	.276	.095	4	24.273
						5	30.341
50	4.814	9.627	14.441	19.254	24.068	Longitude interval.	Inch.
52½	.811	.622	.432	.243	.054		
55	.808	.616	.424	.232	.040		
60	.802	.605	.407	.209	.012		
38 00	4.802	9.605	14.407	19.209	24.012	1	.000
05	.797	.594	.391	.188	.23.985	2	.002
07½	.791	.589	.383	.178	.972	3	.005
10	.792	.584	.375	.167	.959	4	.007
15	.786	.573	.359	.146	.932	5	.010
20	4.781	9.562	14.343	19.124	23.905	Latitude interval.	Meridional distance.
22½	.778	.556	.335	.113	.891		
25	.776	.551	.326	.102	.878		
30	.770	.540	.310	.080	.850		
35	4.764	9.529	14.293	19.058	23.822	1	Inches. 6.069
37½	.762	.524	.285	.047	.809	2	12.138
40	.759	.518	.277	.036	.795	3	18.207
45	.754	.507	.261	.015	.768	4	24.277
						5	30.345
50	4.748	9.496	14.244	18.993	23.740	Longitude interval.	Inch.
52½	.745	.490	.235	.981	.726		
55	.742	.485	.227	.970	.712		
60	.737	.474	.211	.948	.685		
39 00	4.737	9.474	14.211	18.948	23.685	1	.000
05	.731	.463	.194	.926	.657	2	.002
07½	.728	.457	.185	.914	.642	3	.005
10	.726	.451	.177	.902	.628	4	.007
15	.720	.440	.160	.880	.600	5	.010
20	4.714	9.429	14.143	18.858	23.572	Latitude interval.	Meridional distance.
22½	.712	.423	.135	.846	.558		
25	.709	.417	.126	.835	.544		
30	.703	.407	.119	.813	.516		
35	4.698	9.395	14.093	18.790	23.488	1	Inches. 6.070
37½	.695	.389	.084	.779	.474	2	12.140
40	.692	.384	.076	.768	.460	3	18.210
45	.686	.373	.059	.746	.432	4	24.281
						5	30.351
50	4.681	9.362	14.042	18.723	23.404	Longitude interval.	Inch.
52½	.678	.356	.034	.712	.390		
55	.675	.350	.025	.700	.375		
60	.669	.339	.008	.678	.347		

TABLE 10.—Coordinates for the projection of maps (scale 1:100000)—Continued.

Latitude of parallel.	Abscissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
° ' 40 00	<i>Inches.</i> 4.669	<i>Inches.</i> 9.339	<i>Inches.</i> 14.008	<i>Inches.</i> 18.678	<i>Inches.</i> 23.347	1	.000
05	.664	.328	13.991	.655	.319	2	.002
07½	.661	.322	.983	.644	.305	3	.005
10	.658	.316	.975	.632	.291	4	.007
15	.652	.305	.957	.610	.262	5	.010
20	4.647	9.293	13.940	18.586	23.233	Latitude interval.	
22½	.644	.288	.931	.575	.219	Meridional distance.	
25	.641	.282	.923	.564	.205	1	<i>Inches.</i> 6.072
30	.635	.271	.906	.542	.177	2	12.143
35	4.630	9.259	13.889	18.518	23.148	3	18.215
37½	.627	.253	.880	.507	.134	4	24.286
40	.624	.248	.871	.495	.119	5	30.358
45	.618	.236	.854	.472	.090		
50	4.612	9.224	13.837	18.449	23.061	Longitude interval.	Inch.
52½	.609	.219	.828	.438	.047		
55	.606	.213	.819	.426	.032	1	.000
60	.600	.201	.801	.402	.002	2	.002
41 00	4.600	9.201	13.801	18.402	23.002	3	.005
05	.595	.189	.784	.378	.22.973	4	.007
07½	.592	.183	.775	.368	.958	5	.010
10	.589	.178	.766	.355	.944	Latitude interval.	
15	.583	.166	.749	.332	.915	Meridional distance.	
20	4.577	9.154	13.732	18.309	22.886	1	<i>Inches.</i> 6.072
22½	.574	.149	.723	.298	.872	2	12.145
25	.571	.143	.714	.286	.857	3	18.218
30	.566	.131	.697	.262	.828	4	24.290
35	4.560	9.119	13.679	18.239	22.798	5	30.362
37½	.557	.114	.670	.227	.784		
40	.554	.108	.661	.215	.769	Longitude interval.	Inch.
45	.548	.096	.644	.192	.740		
50	4.542	9.084	13.626	18.168	22.710	1	.000
52½	.539	.078	.617	.156	.695	2	.002
55	.536	.072	.608	.145	.681	3	.005
42 00	4.530	9.060	13.591	18.122	22.652	4	.007
05	.524	.049	.572	.098	.622	5	.010
07½	.521	.043	.564	.086	.607	Latitude interval.	
10	.518	.037	.555	.073	.592	Meridional distance.	
15	.513	.025	.537	.050	.563	1	<i>Inches.</i> 6.073
20	4.507	9.013	13.520	18.027	22.533	2	12.148
22½	.504	.007	.511	.014	.504	3	18.220
25	.501	.002	.502	.003	.474	4	24.294
30	.495	.990	.484	17.979		5	30.367
35	4.489	8.978	13.467	17.956	22.445		
37½	.486	.972	.458	.944	.430	Longitude interval.	Inch.
40	.483	.966	.449	.932	.415		
45	.477	.954	.431	.908	.385	1	.000
50	4.471	8.942	13.413	17.884	22.355	2	.002
52½	.468	.936	.404	.872	.340	3	.005
55	.465	.930	.395	.860	.325	4	.007
60	.459	.918	.377	.836	.295	5	.010

TABLE 10.—*Coordinates for the projection of maps (scale 1:100000)*—Continued.

Latitude of parallel.	Abscissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
° ' "	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		
43 00	4.459	8.918	13.377	17.836	22.295	1	.000
05	.453	.906	.359	.812	.265	2	.002
07½	.450	.899	.349	.799	.249	3	.005
10	.447	.894	.340	.787	.234	4	.007
15	.441	.882	.322	.762	.203	5	.010
20	4.434	8.869	13.303	17.738	22.172	Latitude interval.	Meridional distance.
22½	.431	.863	.294	.726	.157		
25	.428	.856	.285	.713	.141	1	<i>Inches.</i>
30	.422	.844	.266	.688	.110	2	6.075
35	4.416	8.832	13.248	17.664	22.080	3	12.149
37½	.413	.826	.239	.652	.065	4	18.223
40	.410	.820	.230	.640	.050	5	24.298
45	.404	.808	.212	.616	.020		30.372
50	4.398	8.796	13.194	17.592	21.990	Longitude interval.	Inch.
52½	.395	.789	.184	.579	.974		
55	.392	.784	.175	.567	.959	1	.000
60	.386	.772	.157	.543	.929	2	.002
44 00	4.386	8.772	13.157	17.543	21.929	3	.005
05	.380	.759	.139	.518	.898	4	.007
07½	.376	.753	.129	.506	.882	5	.010
10	.373	.747	.120	.494	.867		
15	.367	.734	.102	.469	.836	Latitude interval.	Meridional distance.
20	4.361	8.722	13.083	17.444	21.805		
22½	.358	.716	.074	.431	.789	1	.000
25	.355	.709	.064	.419	.774	2	.002
30	.349	.697	.046	.394	.743	3	.005
35	4.342	8.685	13.027	17.370	21.712	4	.007
37½	.339	.678	.018	.357	.696	5	.010
40	.336	.672	.009	.345	.681		
45	.330	.660	12.990	.320	.650	Latitude interval.	Inch.
50	4.324	8.648	12.971	17.295	21.619		
52½	.321	.642	.963	.283	.604	1	.000
55	.318	.635	.953	.270	.588	2	.002
60	.312	.623	.935	.246	.558	3	.005
45 00	4.312	8.623	12.935	17.246	21.558	4	.007
05	.305	.610	.916	.221	.527	5	.010
07½	.302	.604	.906	.208	.511		
10	.299	.598	.897	.196	.495	Latitude interval.	Meridional distance.
15	.293	.586	.878	.171	.464		
20	4.287	8.573	12.860	17.146	21.433	1	.000
22½	.283	.567	.849	.134	.417	2	.002
25	.280	.560	.841	.121	.401	3	.005
30	.274	.548	.822	.096	.370	4	.007
35	4.268	8.535	12.803	17.070	21.338	5	.010
37½	.264	.529	.793	.068	.322		
40	.261	.522	.784	.045	.306	Latitude interval.	Meridional distance.
45	.255	.510	.765	.020	.275		
50	4.249	8.497	12.746	16.995	21.243	1	.000
52½	.246	.491	.737	.982	.228	2	.002
55	.242	.485	.727	.970	.212	3	.005
60	.236	.472	.707	.944	.180	4	.007
						5	.010

TABLE 10.—Coordinates for the projection of maps (scale 1:2000)—Continued.

Latitude of parallel.	Abscissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
46 00	Inches. 4.236	Inches. 8.472	Inches. 12.707	Inches. 16.944	Inches. 21.179	1	.000
05	.229	.459	.688	.918	.147	2	.002
07½	.226	.452	.679	.905	.131	3	.005
10	.223	.446	.669	.892	.115	4	.007
15	.216	.438	.649	.867	.082	5	.010
20	4.210	8.420	12.630	16.840	21.051	Latitude interval.	Meridional distance.
22½	.207	.414	.621	.828	.035	1	Inches. 6.078
25	.204	.408	.611	.815	.019	2	12.157
30	.198	.395	.593	.790	20.988	3	18.235
35	4.191	8.382	12.573	16.764	20.955	4	24.313
37½	.188	.376	.564	.752	.939	5	30.391
40	.184	.369	.553	.738	.922		
45	.178	.356	.534	.712	.890		
50	4.172	8.343	12.515	16.687	20.858	Longitude interval.	Inch.
52½	.168	.337	.505	.674	.842	1	.000
55	.165	.330	.496	.661	.826	2	.002
60	.159	.318	.476	.635	.794	3	.005
47 00	4.159	8.318	12.476	16.635	20.794	4	.007
05	.152	.305	.457	.610	.762	5	.010
07½	.149	.299	.448	.597	.746		
10	.146	.292	.438	.584	.730		
15	.139	.279	.418	.558	.697		
20	4.133	8.266	12.398	16.531	20.664	Latitude interval.	Meridional distance.
22½	.130	.259	.389	.518	.648	1	Inches. 6.078
25	.126	.252	.378	.505	.631	2	12.157
30	.120	.239	.359	.478	.598	3	18.235
35	4.113	8.226	12.339	16.452	20.565	4	24.315
37½	.110	.220	.329	.439	.549	5	30.392
40	.106	.213	.319	.426	.532		
45	.100	.200	.300	.400	.500		
50	4.094	8.187	12.281	16.375	20.468	Longitude interval.	Inch.
52½	.090	.180	.271	.361	.451	1	.000
55	.089	.174	.261	.348	.435	2	.002
60	.080	.161	.241	.322	.402	3	.005
48 00	4.080	8.160	12.241	16.321	20.401	4	.007
05	.074	.148	.222	.296	.370	5	.010
07½	.071	.142	.212	.284	.354		
10	.067	.135	.202	.270	.337		
15	.061	.122	.182	.244	.304		
20	4.054	8.108	12.162	16.217	20.271	Latitude interval.	Meridional distance.
22½	.051	.102	.153	.204	.255	1	Inches. 6.080
25	.048	.095	.143	.190	.238	2	12.160
30	.041	.082	.123	.164	.205	3	18.240
35	4.034	8.069	12.103	16.138	20.172	4	24.320
37½	.031	.062	.093	.124	.155	5	30.400
40	.028	.055	.083	.110	.138		
45	.021	.042	.063	.084	.105		
50	4.014	8.029	12.043	16.058	20.072		
52½	.011	.022	.034	.045	.056		
55	.008	.016	.024	.031	.039		
60	.001	.002	.003	.004	.006		

TABLE 10.—Coordinates for the projection of maps (scale 1:1000)—Continued.

Latitude of parallel.	Abcissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
°	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		
49 00	4.001	8.002	12.003	16.004	20.006	1	.000
05	3.995	7.989	11.984	15.978	19.973	2	.002
07½	.991	.982	.974	.965	.956	3	.005
10	.988	.976	.964	.952	.939	4	.007
15	.981	.962	.943	.924	.906	5	.010
20	3.974	7.949	11.923	15.898	19.872	Latitude interval.	Meridional distance.
22½	.971	.942	.914	.885	.856		
25	.968	.936	.904	.872	.840		
30	.961	.922	.883	.844	.806		
35	3.964	7.908	11.863	15.817	19.771		
37½	.961	.902	.853	.804	.755	1	6.081
40	.948	.895	.843	.790	.738	2	12.162
45	.941	.882	.823	.764	.705	3	18.243
50	3.934	7.869	11.803	15.738	19.672	4	24.324
52½	.931	.862	.793	.724	.655	5	30.405
55	.928	.855	.783	.710	.638		
60	.921	.842	.762	.683	.604		



TABLE 11.—Areas of quadrilaterals of earth's surface of 30' extent in latitude and longitude.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.
° /		° /		° /	
0 00	1,188.10	11 00	1,166.84	22 00	1,103.68
0 15	1,188.08	11 15	1,165.86	22 15	1,101.77
0 30	1,188.05	11 30	1,164.86	22 30	1,099.84
0 45	1,188.00	11 45	1,163.85	22 45	1,097.88
1 00	1,187.92	12 00	1,162.81	23 00	1,095.91
1 15	1,187.82	12 15	1,161.75	23 15	1,093.92
1 30	1,187.70	12 30	1,160.67	23 30	1,091.90
1 45	1,187.56	12 45	1,159.56	23 45	1,089.87
2 00	1,187.39	13 00	1,158.44	24 00	1,087.81
2 15	1,187.20	13 15	1,157.29	24 15	1,085.74
2 30	1,186.99	13 30	1,156.12	24 30	1,083.64
2 45	1,186.76	13 45	1,154.93	24 45	1,081.52
3 00	1,186.51	14 00	1,153.72	25 00	1,079.39
3 15	1,186.24	14 15	1,152.48	25 15	1,077.23
3 30	1,185.95	14 30	1,151.23	25 30	1,075.05
3 45	1,185.62	14 45	1,149.95	25 45	1,072.85
4 00	1,185.28	15 00	1,148.65	26 00	1,070.64
4 15	1,184.92	15 15	1,147.33	26 15	1,068.40
4 30	1,184.53	15 30	1,145.99	26 30	1,066.14
4 45	1,184.13	15 45	1,144.63	26 45	1,063.86
5 00	1,183.70	16 00	1,143.25	27 00	1,061.56
5 15	1,183.24	16 15	1,141.84	27 15	1,059.24
5 30	1,182.77	16 30	1,140.41	27 30	1,056.90
5 45	1,182.28	16 45	1,138.96	27 45	1,054.54
6 00	1,181.76	17 00	1,137.50	28 00	1,052.16
6 15	1,181.22	17 15	1,136.00	28 15	1,049.76
6 30	1,180.66	17 30	1,134.49	28 30	1,047.34
6 45	1,180.08	17 45	1,132.96	28 45	1,044.90
7 00	1,179.48	18 00	1,131.41	29 00	1,042.44
7 15	1,178.85	18 15	1,129.83	29 15	1,039.97
7 30	1,178.20	18 30	1,128.24	29 30	1,037.47
7 45	1,177.53	18 45	1,126.62	29 45	1,034.95
8 00	1,176.84	19 00	1,124.98	30 00	1,032.41
8 15	1,176.13	19 15	1,123.32	30 15	1,029.85
8 30	1,175.39	19 30	1,121.64	30 30	1,027.27
8 45	1,174.63	19 45	1,119.93	30 45	1,024.68
9 00	1,173.86	20 00	1,118.21	31 00	1,022.06
9 15	1,173.06	20 15	1,116.47	31 15	1,019.43
9 30	1,172.23	20 30	1,114.71	31 30	1,016.77
9 45	1,171.39	20 45	1,112.92	31 45	1,014.10
10 00	1,170.52	21 00	1,111.11	32 00	1,011.40
10 15	1,169.63	21 15	1,109.28	32 15	1,008.69
10 30	1,168.73	21 30	1,107.44	32 30	1,005.96
10 45	1,167.80	21 45	1,105.57	32 45	1,003.20

TABLE 11.—*Areas of quadrilaterals of earth's surface of 30' extent in latitude and longitude—Continued.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.
° /		° /		° /	
33 00	1,000.43	44 00	860.25	55 00	687.70
33 15	997.64	44 15	856.67	55 15	683.44
33 30	994.83	44 30	853.07	55 30	679.17
33 45	992.00	44 45	849.46	55 45	674.89
34 00	989.16	45 00	845.82	56 00	670.60
34 15	986.29	45 15	842.18	56 15	666.29
34 30	983.41	45 30	838.51	56 30	661.97
34 45	980.50	45 45	834.83	56 45	657.64
35 00	977.58	46 00	831.13	57 00	653.29
35 15	974.64	46 15	827.42	57 15	648.93
35 30	971.68	46 30	823.68	57 30	644.55
35 45	968.70	46 45	819.94	57 45	640.17
36 00	965.70	47 00	816.18	58 00	635.77
36 15	962.68	47 15	812.40	58 15	631.36
36 30	959.65	47 30	808.60	58 30	626.93
36 45	956.60	47 45	804.79	58 45	622.49
37 00	953.52	48 00	800.97	59 00	618.05
37 15	950.43	48 15	797.13	59 15	613.59
37 30	947.32	48 30	793.27	59 30	609.11
37 45	944.21	48 45	789.39	59 45	604.62
38 00	941.05	49 00	785.50	60 00	600.13
38 15	937.88	49 15	781.60	60 15	595.62
38 30	934.71	49 30	777.68	60 30	591.09
38 45	931.51	49 45	773.74	60 45	586.56
39 00	928.29	50 00	769.79	61 00	582.01
39 15	925.06	50 15	765.83	61 15	577.45
39 30	921.80	50 30	761.85	61 30	572.88
39 45	918.53	50 45	757.85	61 45	568.30
40 00	915.25	51 00	753.84	62 00	563.71
40 15	911.94	51 15	749.82	62 15	559.11
40 30	908.61	51 30	745.78	62 30	554.49
40 45	905.27	51 45	741.72	62 45	549.86
41 00	901.91	52 00	737.65	63 00	545.23
41 15	898.54	52 15	733.57	63 15	540.58
41 30	895.14	52 30	729.47	63 30	535.92
41 45	891.73	52 45	725.36	63 45	531.25
42 00	888.30	53 00	721.23	64 00	526.57
42 15	884.85	53 15	717.08	64 15	521.88
42 30	881.39	53 30	712.93	64 30	517.17
42 45	877.91	53 45	708.76	64 45	512.46
43 00	874.41	54 00	704.57	65 00	507.74
43 15	870.90	54 15	700.38	65 15	503.01
43 30	867.37	54 30	696.16	65 30	498.26
43 45	863.82	54 45	691.94	65 45	493.51

TABLE 11.—*Areas of quadrilaterals of earth's surface of 30' extent in latitude and longitude—Continued.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilat- eral.	Area in square miles.	Middle latitude of quadrilat- eral.	Area in square miles.	Middle latitude of quadrilat- eral.	Area in square miles.
° /		° /		° /	
66 00	488.75	74 00	331.62	82 00	167.57
66 15	483.97	74 15	328.58	82 15	162.37
66 30	479.19	74 30	321.53	82 30	157.16
66 45	474.40	74 45	316.48	82 45	151.95
67 00	469.60	75 00	311.42	83 00	146.74
67 15	464.78	75 15	306.36	83 15	141.53
67 30	459.96	75 30	301.28	83 30	136.31
67 45	455.13	75 45	296.21	83 45	131.09
68 00	450.29	76 00	291.12	84 00	125.87
68 15	445.45	76 15	286.04	84 15	120.64
68 30	440.59	76 30	280.94	84 30	115.42
68 45	435.72	76 45	275.84	84 45	110.18
69 00	430.84	77 00	270.73	85 00	104.95
69 15	425.96	77 15	265.62	85 15	99.72
69 30	421.06	77 30	260.50	85 30	94.48
69 45	416.16	77 45	255.38	85 45	89.25
70 00	411.25	78 00	250.25	86 00	84.01
70 15	406.34	78 15	245.12	86 15	78.76
70 30	401.41	78 30	239.98	86 30	73.52
70 45	396.47	78 45	234.83	86 45	68.27
71 00	391.53	79 00	229.68	87 00	63.03
71 15	386.58	79 15	224.53	87 15	57.78
71 30	381.62	79 30	219.37	87 30	52.53
71 45	376.65	79 45	214.21	87 45	47.28
72 00	371.68	80 00	209.05	88 00	42.03
72 15	366.70	80 15	203.88	88 15	36.78
72 30	361.71	80 30	198.70	88 30	31.53
72 45	356.71	80 45	193.52	88 45	26.27
73 00	351.71	81 00	188.34	89 00	21.02
73 15	346.69	81 15	183.15	89 15	15.76
73 30	341.68	81 30	177.96	89 30	10.51
73 45	336.65	81 45	172.77	89 45	5.26

TABLE 12.—*Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.				Area in square miles.				Middle latitude of quadrilateral.				Area in square miles.				Middle latitude of quadrilateral.				Area in square miles.			
°	'	''						°	'	''					°	'	''						
0	07	30		297.02				5	37	30		295.63			11	07	30		291.59				
0	15	00		297.02				5	45	00		295.57			11	15	00		291.47				
0	22	30		297.02				5	52	30		295.51			11	22	30		291.34				
0	30	00		297.01				6	00	00		295.44			11	30	00		291.22				
0	37	30		297.01				6	07	30		295.37			11	37	30		291.09				
0	45	00		297.00				6	15	00		295.31			11	45	00		290.96				
0	52	30		296.99				6	22	30		295.24			11	52	30		290.83				
1	00	00		296.98				6	30	00		295.17			12	00	00		290.70				
1	07	30		296.97				6	37	30		295.09			12	07	30		290.57				
1	15	00		296.96				6	45	00		295.02			12	15	00		290.44				
1	22	30		296.94				6	52	30		294.95			12	22	30		290.30				
1	30	00		296.93				7	00	00		294.87			12	30	00		290.17				
1	37	30		296.91				7	07	30		294.79			12	37	30		290.03				
1	45	00		296.89				7	15	00		294.71			12	45	00		289.89				
1	52	30		296.87				7	22	30		294.63			12	52	30		289.75				
2	00	00		296.85				7	30	00		294.55			13	00	00		289.61				
2	07	30		296.82				7	37	30		294.47			13	07	30		289.47				
2	15	00		296.80				7	45	00		294.39			13	15	00		289.33				
2	22	30		296.77				7	52	30		294.30			13	22	30		289.18				
2	30	00		296.75				8	00	00		294.21			13	30	00		289.03				
2	37	30		296.72				8	07	30		294.12			13	37	30		288.88				
2	45	00		296.69				8	15	00		294.03			13	45	00		288.73				
2	52	30		296.66				8	22	30		293.94			13	52	30		288.58				
3	00	00		296.63				8	30	00		293.85			14	00	00		288.43				
3	07	30		296.60				8	37	30		293.75			14	07	30		288.28				
3	15	00		296.56				8	45	00		293.66			14	15	00		288.12				
3	22	30		296.53				8	52	30		293.56			14	22	30		287.96				
3	30	00		296.49				9	00	00		293.47			14	30	00		287.81				
3	37	30		296.45				9	07	30		293.37			14	37	30		287.65				
3	45	00		296.41				9	15	00		293.27			14	45	00		287.49				
3	52	30		296.36				9	22	30		293.16			14	52	30		287.33				
4	00	00		296.32				9	30	00		293.06			15	00	00		287.17				
4	07	30		296.28				9	37	30		292.95			15	07	30		287.00				
4	15	00		296.23				9	45	00		292.85			15	15	00		286.83				
4	22	30		296.18				9	52	30		292.74			15	22	30		286.67				
4	30	00		296.13				10	00	00		292.63			15	30	00		286.50				
4	37	30		296.08				10	07	30		292.52			15	37	30		286.33				
4	45	00		296.03				10	15	00		292.41			15	45	00		286.16				
4	52	30		295.98				10	22	30		292.30			15	52	30		285.99				
5	00	00		295.93				10	30	00		292.19			16	00	00		285.82				
5	07	30		295.87				10	37	30		292.07			16	07	30		285.64				
5	15	00		295.81				10	45	00		291.95			16	15	00		285.46				
5	22	30		295.75				10	52	30		291.83			16	22	30		285.28				
5	30	00		295.69				11	00	00		291.71			16	30	00		285.10				

TABLE 12.—Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.				Middle latitude of quadrilateral.				Middle latitude of quadrilateral.			
Area in square miles.				Area in square miles.				Area in square miles.			
°	'	"		°	'	"		°	'	"	
16	37	30	284.92	22	07	30	275.68	27	37	30	263.93
16	45	00	284.74	22	15	00	275.44	27	45	00	263.64
16	52	30	284.56	22	22	30	275.20	27	52	30	263.34
17	00	00	284.38	22	30	00	274.96	28	00	00	263.04
17	07	30	284.19	22	37	30	274.72	28	07	30	262.74
17	15	00	284.00	22	45	00	274.47	28	15	00	262.44
17	22	30	283.81	22	52	30	274.22	28	22	30	262.14
17	30	00	283.62	23	00	00	273.98	28	30	00	261.84
17	37	30	283.43	23	07	30	273.73	28	37	30	261.53
17	45	00	283.24	23	15	00	273.48	28	45	00	261.23
17	52	30	283.05	23	22	30	273.23	28	52	30	260.92
18	00	00	282.86	23	30	00	272.98	29	00	00	260.61
18	07	30	282.66	23	37	30	272.72	29	07	30	260.30
18	15	00	282.46	23	45	00	272.47	29	15	00	259.99
18	22	30	282.26	23	52	30	272.21	29	22	30	259.68
18	30	00	282.06	24	00	00	271.95	29	30	00	259.37
18	37	30	281.86	24	07	30	371.69	29	37	30	259.05
18	45	00	281.66	24	15	00	271.44	29	45	00	258.74
18	52	30	281.45	24	22	30	271.17	29	52	30	258.42
19	00	00	281.25	24	30	00	270.91	30	00	00	258.10
19	07	30	281.04	24	37	30	270.65	30	07	30	257.78
19	15	00	280.83	24	45	00	270.38	30	15	00	257.46
19	22	30	280.62	24	52	30	270.11	30	22	30	257.14
19	30	00	280.41	25	00	00	269.85	30	30	00	256.82
19	37	30	280.20	25	07	30	269.58	30	37	30	256.49
19	45	00	279.99	25	15	00	269.31	30	45	00	256.17
19	52	30	279.77	25	22	30	269.04	30	52	30	255.84
20	00	00	279.55	25	30	00	268.76	31	00	00	255.52
20	07	30	279.34	25	37	30	268.49	31	07	30	255.19
20	15	00	279.12	25	45	00	268.21	31	15	00	254.86
20	22	30	278.90	25	52	30	267.94	31	22	30	254.53
20	30	00	278.68	26	00	00	267.66	31	30	00	254.19
20	37	30	278.46	26	07	30	267.38	31	37	30	253.86
20	45	00	278.23	26	15	00	267.10	31	45	00	253.53
20	52	30	278.00	26	22	30	266.82	31	52	30	253.19
21	00	00	277.78	26	30	00	266.54	32	00	00	252.85
21	07	30	277.55	26	37	30	266.25	32	07	30	252.51
21	15	00	277.32	26	45	00	265.97	32	15	00	252.17
21	22	30	277.09	26	52	30	265.68	32	22	30	251.83
21	30	00	276.86	27	00	00	265.39	32	30	00	251.49
21	37	30	276.63	27	07	30	265.10	32	37	30	251.15
21	45	00	276.39	27	15	00	264.81	32	45	00	250.80
21	52	30	276.16	27	22	30	264.52	32	52	30	250.45
22	00	00	275.92	27	30	00	264.23	33	00	00	250.11

TABLE 12.—*Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude—Continued.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.
°	'	"		°	'	"		°	'	"	
33	07	30	249.76	38	37	30	233.28	44	07	30	214.61
33	15	00	249.41	38	45	00	232.88	44	15	00	214.17
33	22	30	249.06	38	52	30	232.48	44	22	30	213.72
33	30	00	248.71	39	00	00	232.07	44	30	00	213.27
33	37	30	248.36	39	07	30	231.67	44	37	30	212.82
33	45	00	248.00	39	15	00	231.27	44	45	00	212.37
33	52	30	247.65	39	22	30	230.86	44	52	30	211.91
34	00	00	247.29	39	30	00	230.45	45	00	00	211.46
34	07	30	246.93	39	37	30	230.04	45	07	30	211.00
34	15	00	246.57	39	45	00	229.63	45	15	00	210.55
34	22	30	246.21	39	52	30	229.22	45	22	30	210.09
34	30	00	245.85	40	00	00	228.81	45	30	00	209.63
34	37	30	245.49	40	07	30	228.40	45	37	30	209.17
34	45	00	245.13	40	15	00	227.99	45	45	00	208.71
34	52	30	244.76	40	22	30	227.57	45	52	30	208.25
35	00	00	244.40	40	30	00	227.15	46	00	00	207.78
35	07	30	244.03	40	37	30	226.73	46	07	30	207.32
35	15	00	243.66	40	45	00	226.32	46	15	00	206.86
35	22	30	243.29	40	52	30	225.90	46	22	30	206.39
35	30	00	242.92	41	00	00	225.48	46	30	00	205.92
35	37	30	242.55	41	07	30	225.06	46	37	30	205.45
35	45	00	242.18	41	15	00	224.64	46	45	00	204.99
35	52	30	241.80	41	22	30	224.21	46	52	30	204.52
36	00	00	241.43	41	30	00	223.79	47	00	00	204.05
36	07	30	241.05	41	37	30	223.36	47	07	30	203.57
36	15	00	240.67	41	45	00	222.93	47	15	00	203.10
36	22	30	240.29	41	52	30	222.50	47	22	30	202.63
36	30	00	239.91	42	00	00	222.08	47	30	00	202.15
36	37	30	239.53	42	07	30	221.65	47	37	30	201.67
36	45	00	239.15	42	15	00	221.21	47	45	00	201.20
36	52	30	238.77	42	22	30	220.78	47	52	30	200.72
37	00	00	238.38	42	30	00	220.35	48	00	00	200.24
37	07	30	237.99	42	37	30	219.91	48	07	30	199.76
37	15	00	237.61	42	45	00	219.48	48	15	00	199.28
37	22	30	237.22	42	52	30	219.04	48	22	30	198.80
37	30	00	236.83	43	00	00	218.60	48	30	00	198.32
37	37	30	236.44	43	07	30	218.16	48	37	30	197.83
37	45	00	236.05	43	15	00	217.73	48	45	00	197.35
37	52	30	235.66	43	22	30	217.28	48	52	30	196.86
38	00	00	235.26	43	30	00	216.84	49	00	00	196.38
38	07	30	234.87	43	37	30	216.40	49	07	30	195.89
38	15	00	234.47	43	45	00	215.96	49	15	00	195.40
38	22	30	234.07	43	52	30	215.51	49	22	30	194.91
38	30	00	233.68	44	00	00	215.06	49	30	00	194.42

TABLE 12.—Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.
°	'	"		°	'	"		°	'	"	
49	37	30	193.93	55	07	30	171.39	60	37	30	147.21
49	45	00	193.44	55	15	00	170.86	60	45	00	146.64
49	52	30	192.94	55	22	30	170.33	60	52	30	146.07
50	00	00	192.45	55	30	00	169.79	61	00	00	145.50
50	07	30	191.95	55	37	30	169.26	61	07	30	144.93
50	15	00	191.46	55	45	00	168.72	61	15	00	144.36
50	22	30	190.96	55	52	30	168.19	61	22	30	143.79
50	30	00	190.46	56	00	00	167.65	61	30	00	143.22
50	37	30	189.96	56	07	30	167.11	61	37	30	142.65
50	45	00	189.46	56	15	00	166.57	61	45	00	142.08
50	52	30	188.96	56	22	30	166.03	61	52	30	141.50
51	00	00	188.46	56	30	00	165.49	62	00	00	140.93
51	07	30	187.96	56	37	30	164.95	62	07	30	140.35
51	15	00	187.46	56	45	00	164.41	62	15	00	139.78
51	22	30	186.95	56	52	30	163.87	62	22	30	139.20
51	30	00	186.45	57	00	00	163.32	62	30	00	138.62
51	37	30	185.94	57	07	30	162.78	62	37	30	138.04
51	45	00	185.43	57	15	00	162.23	62	45	00	137.47
51	52	30	184.92	57	22	30	161.68	62	52	30	136.89
52	00	00	184.41	57	30	00	161.14	63	00	00	136.31
52	07	30	183.90	57	37	30	160.59	63	07	30	135.73
52	15	00	183.39	57	45	00	160.04	63	15	00	135.15
52	22	30	182.88	57	52	30	159.49	63	22	30	134.56
52	30	00	182.37	58	00	00	158.94	63	30	00	133.98
52	37	30	181.85	58	07	30	158.39	63	37	30	133.40
52	45	00	181.34	58	15	00	157.84	63	45	00	132.81
52	52	30	180.82	58	22	30	157.29	63	52	30	132.23
53	00	00	180.31	58	30	00	156.73	64	00	00	131.64
53	07	30	179.79	58	37	30	156.18	64	07	30	131.06
53	15	00	179.27	58	45	00	155.62	64	15	00	130.47
53	22	30	178.75	58	52	30	155.07	64	22	30	129.88
53	30	00	178.23	59	00	00	154.51	64	30	00	129.29
53	37	30	177.71	59	07	30	153.96	64	37	30	128.70
53	45	00	177.19	59	15	00	153.40	64	45	00	128.12
53	52	30	176.67	59	22	30	152.84	64	52	30	127.53
54	00	00	176.14	59	30	00	152.28	65	00	00	126.94
54	07	30	175.62	59	37	30	151.72	65	07	30	126.34
54	15	00	175.10	59	45	00	151.16	65	15	00	125.75
54	22	30	174.57	59	52	30	150.60	65	22	30	125.16
54	30	00	174.04	60	00	00	150.03	65	30	00	124.57
54	37	30	173.51	60	07	30	149.47	65	37	30	123.97
54	45	00	172.99	60	15	00	148.91	65	45	00	123.38
54	52	30	172.46	60	22	30	148.34	65	52	30	122.78
55	00	00	171.93	60	30	00	147.77	66	00	00	122.19

TABLE 12.—*Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude—Continued.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.			Area in square miles.		Middle latitude of quadrilateral.			Area in square miles.		Middle latitude of quadrilateral.			Area in square miles.	
°	'	"			°	'	"			°	'	"		
66	07	30	121.59		71	37	30	94.78		77	07	30	67.04	
66	15	00	120.99		71	45	00	94.16		77	15	00	66.41	
66	22	30	120.40		71	52	30	93.54		77	22	30	65.77	
66	30	00	119.80		72	00	00	92.92		77	30	00	65.13	
66	37	30	119.20		72	07	30	92.30		77	37	30	64.49	
66	45	00	118.60		72	15	00	91.68		77	45	00	63.85	
66	52	30	118.00		72	22	30	91.05		77	52	30	63.20	
67	00	00	117.40		72	30	00	90.43		78	00	00	62.56	
67	07	30	116.80		72	37	30	89.80		78	07	30	61.92	
67	15	00	116.20		72	45	00	89.18		78	15	00	61.28	
67	22	30	115.59		72	52	30	88.55		78	22	30	60.64	
67	30	00	114.99		73	00	00	87.93		78	30	00	60.00	
67	37	30	114.39		73	07	30	87.30		78	37	30	59.35	
67	45	00	113.78		73	15	00	86.67		78	45	00	58.71	
67	52	30	113.18		73	22	30	86.05		78	52	30	58.06	
68	00	00	112.57		73	30	00	85.42		79	00	00	57.42	
68	07	30	111.97		73	37	30	84.79		79	07	30	56.78	
68	15	00	111.36		73	45	00	84.16		79	15	00	56.13	
68	22	30	110.76		73	52	30	83.53		79	22	30	55.49	
68	30	00	110.15		74	00	00	82.91		79	30	00	54.84	
68	37	30	109.54		74	07	30	82.28		79	37	30	54.20	
68	45	00	108.93		74	15	00	81.65		79	45	00	53.55	
68	52	30	108.32		74	22	30	81.01		79	52	30	52.91	
69	00	00	107.71		74	30	00	80.38		80	00	00	52.26	
69	07	30	107.10		74	37	30	79.75		80	07	30	51.62	
69	15	00	106.49		74	45	00	79.12		80	15	00	50.97	
69	22	30	105.88		74	52	30	78.49		80	22	30	50.32	
69	30	00	105.27		75	00	00	77.86		80	30	00	49.68	
69	37	30	104.65		75	07	30	77.22		80	37	30	49.03	
69	45	00	104.04		75	15	00	76.59		80	45	00	48.38	
69	52	30	103.43		75	22	30	75.95		80	52	30	47.73	
70	00	00	102.81		75	30	00	75.32		81	00	00	47.08	
70	07	30	102.20		75	37	30	74.69		81	07	30	46.44	
70	15	00	101.59		75	45	00	74.05		81	15	00	45.79	
70	22	30	100.97		75	52	30	73.42		81	22	30	45.14	
70	30	00	100.35		76	00	00	72.78		81	30	00	44.49	
70	37	30	99.74		76	07	30	72.14		81	37	30	43.84	
70	45	00	99.12		76	15	00	71.51		81	45	00	43.19	
70	52	30	98.50		76	22	30	70.87		81	52	30	42.54	
71	00	00	97.88		76	30	00	70.24		82	00	00	41.89	
71	07	30	97.26		76	37	30	69.60		82	07	30	41.24	
71	15	00	96.65		76	45	00	68.96		82	15	00	40.59	
71	22	30	96.03		76	52	30	68.32		82	22	30	39.94	
71	30	00	95.41		77	00	00	67.68		82	30	00	39.29	



TABLE 12.—*Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude—Continued.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.
°	'	"		°	'	"		°	'	"	
82	37	30	38.64	85	07	30	25.58	87	37	30	12.48
82	45	00	37.99	85	15	00	24.93	87	45	00	11.82
82	52	30	37.34	85	22	30	24.27	87	52	30	11.16
83	00	00	36.69	85	30	00	23.62	88	00	00	10.51
83	07	30	36.03	85	37	30	22.97	88	07	30	9.85
83	15	00	35.38	85	45	00	22.31	88	15	00	9.20
83	22	30	34.73	85	52	30	21.66	88	22	30	8.54
83	30	00	34.08	86	00	00	21.00	88	30	00	7.88
83	37	30	33.42	86	07	30	20.35	88	37	30	7.22
83	45	00	32.77	86	15	00	19.69	88	45	00	6.57
83	52	30	32.12	86	22	30	19.04	88	52	30	5.91
84	00	00	31.47	86	30	00	18.38	89	00	00	5.26
84	07	30	30.81	86	37	30	17.72	89	07	30	4.60
84	15	00	30.16	86	45	00	17.07	89	15	00	3.94
84	22	30	29.51	86	52	30	16.41	89	22	30	3.28
84	30	00	28.86	87	00	00	15.76	89	30	00	2.63
84	37	30	28.20	87	07	30	15.10	89	37	30	1.97
84	45	00	27.54	87	15	00	14.44	89	45	00	1.31
84	52	30	26.89	87	22	30	13.79	89	52	30	0.66
85	00	00	26.24	87	30	00	13.13				

TABLE 13.—*Areas of quadrilaterals of earth's surface of 10' extent in latitude and longitude.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.
° /		° /		° /	
0 05	132.01	7 25	130.93	14 45	127.77
0 15	132.01	7 35	130.88	14 55	127.67
0 25	132.01	7 45	130.84	15 05	127.58
0 35	132.00	7 55	130.79	15 15	127.48
0 45	132.00	8 05	130.73	15 25	127.38
0 55	131.99	8 15	130.68	15 35	127.28
1 05	131.99	8 25	130.63	15 45	127.18
1 15	131.98	8 35	130.57	15 55	127.08
1 25	131.97	8 45	130.51	16 05	126.98
1 35	131.96	8 55	130.46	16 15	126.87
1 45	131.95	9 05	130.40	16 25	126.77
1 55	131.94	9 15	130.34	16 35	126.66
2 05	131.93	9 25	130.28	16 45	126.55
2 15	131.91	9 35	130.22	16 55	126.44
2 25	131.90	9 45	130.15	17 05	126.33
2 35	131.88	9 55	130.09	17 15	126.22
2 45	131.86	10 05	130.02	17 25	126.11
2 55	131.84	10 15	129.96	17 35	126.00
3 05	131.82	10 25	129.89	17 45	125.88
3 15	131.80	10 35	129.82	17 55	125.77
3 25	131.78	10 45	129.76	18 05	125.65
3 35	131.76	10 55	129.68	18 15	125.54
3 45	131.74	11 05	129.61	18 25	125.42
3 55	131.71	11 15	129.54	18 35	125.30
4 05	131.68	11 25	129.47	18 45	125.18
4 15	131.66	11 35	129.39	18 55	125.06
4 25	131.63	11 45	129.32	19 05	124.94
4 35	131.60	11 55	129.24	19 15	124.81
4 45	131.57	12 05	129.16	19 25	124.69
4 55	131.54	12 15	129.08	19 35	124.56
5 05	131.50	12 25	129.00	19 45	124.44
5 15	131.47	12 35	128.92	19 55	124.31
5 25	131.44	12 45	128.84	20 05	124.18
5 35	131.40	12 55	128.76	20 15	124.05
5 45	131.36	13 05	128.67	20 25	123.92
5 55	131.33	13 15	128.59	20 35	123.79
6 05	131.29	13 25	128.50	20 45	123.66
6 15	131.25	13 35	128.41	20 55	123.52
6 25	131.21	13 45	128.33	21 05	123.39
6 35	131.16	13 55	128.24	21 15	123.25
6 45	131.12	14 05	128.14	21 25	123.12
6 55	131.07	14 15	128.05	21 35	122.98
7 05	131.03	14 25	127.96	21 45	122.84
7 15	130.98	14 35	127.87	21 55	122.70

TABLE 13.—Areas of quadrilaterals of earth's surface of 10' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.
° /		° /		° /	
22 05	122.56	29 25	115.37	36 45	106.29
22 15	122.42	29 35	115.18	36 55	106.06
22 25	122.28	29 45	114.99	37 05	105.83
22 35	122.13	29 55	114.81	37 15	105.60
22 45	121.99	30 05	114.62	37 25	105.37
22 55	121.84	30 15	114.43	37 35	105.14
23 05	121.69	30 25	114.24	37 45	104.91
23 15	121.55	30 35	114.04	37 55	104.68
23 25	121.40	30 45	113.85	38 05	104.44
23 35	121.25	30 55	113.66	38 15	104.21
23 45	121.10	31 05	113.47	38 25	103.97
23 55	120.94	31 15	113.27	38 35	103.74
24 05	120.79	31 25	113.07	38 45	103.50
24 15	120.64	31 35	112.88	38 55	103.26
24 25	120.48	31 45	112.68	39 05	103.02
24 35	120.33	31 55	112.48	39 15	102.78
24 45	120.17	32 05	112.28	39 25	102.54
24 55	120.01	32 15	112.08	39 35	102.30
25 05	119.85	32 25	111.87	39 45	102.06
25 15	119.69	32 35	111.67	39 55	101.82
25 25	119.53	32 45	111.47	40 05	101.57
25 35	119.37	32 55	111.26	40 15	101.33
25 45	119.21	33 05	111.06	40 25	101.08
25 55	119.04	33 15	110.85	40 35	100.83
26 05	118.87	33 25	110.64	40 45	100.59
26 15	118.71	33 35	110.43	40 55	100.34
26 25	118.54	33 45	110.22	41 05	100.09
26 35	118.37	33 55	110.01	41 15	99.84
26 45	118.21	34 05	109.80	41 25	99.59
26 55	118.04	34 15	109.59	41 35	99.33
27 05	117.87	34 25	109.37	41 45	99.08
27 15	117.69	34 35	109.16	41 55	98.83
27 25	117.52	34 45	108.94	42 05	98.57
27 35	117.35	34 55	108.73	42 15	98.32
27 45	117.17	35 05	108.51	42 25	98.06
27 55	116.99	35 15	108.29	42 35	97.80
28 05	116.82	35 25	108.07	42 45	97.55
28 15	116.64	35 35	107.85	42 55	97.29
28 25	116.46	35 45	107.63	43 05	97.03
28 35	116.28	35 55	107.41	43 15	96.77
28 45	116.10	36 05	107.19	43 25	96.50
28 55	115.92	36 15	106.96	43 35	96.24
29 05	115.73	36 25	106.74	43 45	95.98
29 15	115.55	36 35	106.51	43 55	95.71

TABLE 13.—*Areas of quadrilaterals of earth's surface of 10' extent in latitude and longitude—Continued*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.
° /		° /		° /	
44 05	95.45	50 45	84.21	57 25	71.78
44 15	95.19	50 55	83.91	57 35	71.46
44 25	94.92	51 05	83.61	57 45	71.13
44 35	94.65	51 15	83.31	57 55	70.80
44 45	94.38	51 25	83.01	58 05	70.48
44 55	94.11	51 35	82.71	58 15	70.15
45 05	93.84	51 45	82.41	58 25	69.82
45 15	93.58	51 55	82.11	58 35	69.49
45 25	93.30	52 05	81.81	58 45	69.17
45 35	93.03	52 15	81.51	58 55	68.84
45 45	92.76	52 25	81.20	59 05	68.51
45 55	92.48	52 35	80.90	59 15	68.18
46 05	92.21	52 45	80.60	59 25	67.84
46 15	91.94	52 55	80.29	59 35	67.51
46 25	91.66	53 05	79.98	59 45	67.18
46 35	91.38	53 15	79.68	59 55	66.85
46 45	91.10	53 25	79.37	60 05	66.51
46 55	90.82	53 35	79.06	60 15	66.18
47 05	90.55	53 45	78.75	60 25	65.84
47 15	90.27	53 55	78.44	60 35	65.51
47 25	89.99	54 05	78.13	60 45	65.17
47 35	89.70	54 15	77.82	60 55	64.84
47 45	89.42	54 25	77.51	61 05	64.50
47 55	89.14	54 35	77.19	61 15	64.16
48 05	88.85	54 45	76.88	61 25	63.82
48 15	88.57	54 55	76.57	61 35	63.48
48 25	88.28	55 05	76.25	61 45	63.14
48 35	88.00	55 15	75.94	61 55	62.80
48 45	87.71	55 25	75.62	62 05	62.46
48 55	87.42	55 35	75.30	62 15	62.12
49 05	87.13	55 45	74.99	62 25	61.78
49 15	86.84	55 55	74.67	62 35	61.44
49 25	86.55	56 05	74.35	62 45	61.10
49 35	86.26	56 15	74.03	62 55	60.75
49 45	85.97	56 25	73.71	63 05	60.41
49 55	85.68	56 35	73.39	63 15	60.06
50 05	85.39	56 45	73.07	63 25	59.72
50 15	85.09	56 55	72.75	63 35	59.37
50 25	84.80	57 05	72.43	63 45	59.03
50 35	84.50	57 15	72.10	63 55	58.68

TABLE 13.—Areas of quadrilaterals of earth's surface of 10' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.
° /		° /		° /	
64 05	58.33	70 45	44.05	77 25	29.13
64 15	57.99	70 55	43.69	77 35	28.76
64 25	57.64	71 05	43.32	77 45	28.37
64 35	57.29	71 15	42.95	77 55	27.99
64 45	56.94	71 25	42.58	78 05	27.62
64 55	56.59	71 35	42.22	78 15	27.24
65 05	56.24	71 45	41.85	78 25	26.85
65 15	55.89	71 55	41.48	78 35	26.47
65 25	55.54	72 05	41.11	78 45	26.09
65 35	55.19	72 15	40.74	78 55	25.71
65 45	54.83	72 25	40.37	79 05	25.33
65 55	54.48	72 35	40.00	79 15	24.95
66 05	54.13	72 45	39.63	79 25	24.57
66 15	53.78	72 55	39.26	79 35	24.18
66 25	53.42	73 05	38.89	79 45	23.80
66 35	53.06	73 15	38.52	79 55	23.42
66 45	52.71	73 25	38.15	80 05	23.04
66 55	52.35	73 35	37.78	80 15	22.65
67 05	52.00	73 45	37.41	80 25	22.27
67 15	51.64	73 55	37.03	80 35	21.89
67 25	51.28	74 05	36.66	80 45	21.50
67 35	50.93	74 15	36.29	80 55	21.12
67 45	50.57	74 25	35.91	81 05	20.73
67 55	50.21	74 35	35.54	81 15	20.35
68 05	49.85	74 45	35.17	81 25	19.97
68 15	49.49	74 55	34.79	81 35	19.58
68 25	49.13	75 05	34.42	81 45	19.20
68 35	48.77	75 15	34.04	81 55	18.81
68 45	48.41	75 25	33.66	82 05	18.43
68 55	48.05	75 35	33.29	82 15	18.04
69 05	47.69	75 45	32.91	82 25	17.65
69 15	47.33	75 55	32.53	82 35	17.27
69 25	46.97	76 05	32.16	82 45	16.88
69 35	46.60	76 15	31.78	82 55	16.50
69 45	46.24	76 25	31.40	83 05	16.11
69 55	45.88	76 35	31.03	83 15	15.73
70 05	45.51	76 45	30.65	83 25	15.34
70 15	45.15	76 55	30.27	83 35	14.95
70 25	44.78	77 05	29.89	83 45	14.57
70 35	44.42	77 15	29.51	83 55	14.18

TABLE 13.—*Areas of quadrilaterals of earth's surface of 10' extent in latitude and longitude—Continued.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.
° /		° /		° /	
84 05	13.79	86 05	9.14	88 05	4.47
84 15	13.40	86 15	8.75	88 15	4.09
84 25	13.02	86 25	8.36	88 25	3.70
84 35	12.63	86 35	7.97	88 35	3.31
84 45	12.24	86 45	7.59	88 45	2.92
84 55	11.86	86 55	7.20	88 55	2.53
85 05	11.47	87 05	6.81	89 05	2.14
85 15	11.08	87 15	6.42	89 15	1.75
85 25	10.69	87 25	6.03	89 25	1.36
85 35	10.30	87 35	5.64	89 35	0.97
85 45	9.92	87 45	5.25	89 45	0.58
85 55	9.53	87 55	4.86	89 55	0.19

o	h. m.	o	h. m.	o	h. m.	o	h. m.	o	h. m.	o	h. m.	o	h. m.	o	h. m.	o	h. m.	o	h. m.
0	0 0	60	4 0	120	8 0	180	12 0	240	16 0	300	20 0	0	0 0	60	4 0	120	8 0	180	12 0
1	0 4	61	4 4	121	8 4	181	12 4	241	16 4	301	20 4	1	0 4	61	4 4	121	8 4	181	12 4
2	0 8	62	4 8	122	8 8	182	12 8	242	16 8	302	20 8	2	0 8	62	4 8	122	8 8	182	12 8
3	0 12	63	4 12	123	8 12	183	12 12	243	16 12	303	20 12	3	0 12	63	4 12	123	8 12	183	12 12
4	0 16	64	4 16	124	8 16	184	12 16	244	16 16	304	20 16	4	0 16	64	4 16	124	8 16	184	12 16
5	0 20	65	4 20	125	8 20	185	12 20	245	16 20	305	20 20	5	0 20	65	4 20	125	8 20	185	12 20
6	0 24	66	4 24	126	8 24	186	12 24	246	16 24	306	20 24	6	0 24	66	4 24	126	8 24	186	12 24
7	0 28	67	4 28	127	8 28	187	12 28	247	16 28	307	20 28	7	0 28	67	4 28	127	8 28	187	12 28
8	0 32	68	4 32	128	8 32	188	12 32	248	16 32	308	20 32	8	0 32	68	4 32	128	8 32	188	12 32
9	0 36	69	4 36	129	8 36	189	12 36	249	16 36	309	20 36	9	0 36	69	4 36	129	8 36	189	12 36
10	0 40	70	4 40	130	8 40	190	12 40	250	16 40	310	20 40	10	0 40	70	4 40	130	8 40	190	12 40
11	0 44	71	4 44	131	8 44	191	12 44	251	16 44	311	20 44	11	0 44	71	4 44	131	8 44	191	12 44
12	0 48	72	4 48	132	8 48	192	12 48	252	16 48	312	20 48	12	0 48	72	4 48	132	8 48	192	12 48
13	0 52	73	4 52	133	8 52	193	12 52	253	16 52	313	20 52	13	0 52	73	4 52	133	8 52	193	12 52
14	0 56	74	4 56	134	8 56	194	12 56	254	16 56	314	20 56	14	0 56	74	4 56	134	8 56	194	12 56
15	1 0	75	5 0	135	9 0	195	13 0	255	17 0	315	21 0	15	1 0	75	5 0	135	9 0	195	13 0
16	1 4	76	5 4	136	9 4	196	13 4	256	17 4	316	21 4	16	1 4	76	5 4	136	9 4	196	13 4
17	1 8	77	5 8	137	9 8	197	13 8	257	17 8	317	21 8	17	1 8	77	5 8	137	9 8	197	13 8
18	1 12	78	5 12	138	9 12	198	13 12	258	17 12	318	21 12	18	1 12	78	5 12	138	9 12	198	13 12
19	1 16	79	5 16	139	9 16	199	13 16	259	17 16	319	21 16	19	1 16	79	5 16	139	9 16	199	13 16
20	1 20	80	5 20	140	9 20	200	13 20	260	17 20	320	21 20	20	1 20	80	5 20	140	9 20	200	13 20
21	1 24	81	5 24	141	9 24	201	13 24	261	17 24	321	21 24	21	1 24	81	5 24	141	9 24	201	13 24
22	1 28	82	5 28	142	9 28	202	13 28	262	17 28	322	21 28	22	1 28	82	5 28	142	9 28	202	

TABLE 15.—*For conversion of time into arc.*

Hours of time into arc.											
Time.	Arc.	Time.	Arc.	Time.	Arc.	Time.	Arc.	Time.	Arc.	Time.	Arc.
<i>hrs.</i>	°	<i>hrs.</i>	°	<i>hrs.</i>	°	<i>hrs.</i>	°	<i>hrs.</i>	°	<i>hrs.</i>	°
1	15	5	75	9	135	13	195	17	255	21	315
2	30	6	90	10	150	14	210	18	270	22	330
3	45	7	105	11	165	15	225	19	285	23	345
4	60	8	120	12	180	16	240	20	300	24	360

Minutes of time into arc.						Seconds of time into arc.					
m.	° ' "	m.	° ' "	m.	° ' "	s.	° ' "	s.	° ' "	s.	° ' "
1	0 15	21	5 15	41	10 15	1	0 15	21	5 15	41	10 15
2	0 30	22	5 30	42	10 30	2	0 30	22	5 30	42	10 30
3	0 45	23	5 45	43	10 45	3	0 45	23	5 45	43	10 45
4	1 0	24	6 0	44	11 0	4	1 0	24	6 0	44	11 0
5	1 15	25	6 15	45	11 15	5	1 15	25	6 15	45	11 15
6	1 30	26	6 30	46	11 30	6	1 30	26	6 30	46	11 30
7	1 45	27	6 45	47	11 45	7	1 45	27	6 45	47	11 45
8	2 0	28	7 0	48	12 0	8	2 0	28	7 0	48	12 0
9	2 15	29	7 15	49	12 15	9	2 15	29	7 15	49	12 15
10	2 30	30	7 30	50	12 30	10	2 30	30	7 30	50	12 30
11	2 45	31	7 45	51	12 45	11	2 45	31	7 45	51	12 45
12	3 0	32	8 0	52	13 0	12	3 0	32	8 0	52	13 0
13	3 15	33	8 15	53	13 15	13	3 15	33	8 15	53	13 15
14	3 30	34	8 30	54	13 30	14	3 30	34	8 30	54	13 30
15	3 45	35	8 45	55	13 45	15	3 45	35	8 45	55	13 45
16	4 0	36	9 0	56	14 0	16	4 0	36	9 0	56	14 0
17	4 15	37	9 15	57	14 15	17	4 15	37	9 15	57	14 15
18	4 30	38	9 30	58	14 30	18	4 30	38	9 30	58	14 30
19	4 45	39	9 45	59	14 45	19	4 45	39	9 45	59	14 45
20	5 0	40	10 0	60	15 0	20	5 0	40	10 0	60	15 0

Hundredths of a second of time into arc.										
Hundredths of a second of time.	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
s.	"	"	"	"	"	"	"	"	"	"
0.00	0.00	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35
.10	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85
.20	3.00	3.15	3.30	3.45	3.60	3.75	3.90	4.05	4.20	4.35
.30	4.50	4.65	4.80	4.95	5.10	5.25	5.40	5.55	5.70	5.85
.40	6.00	6.15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35
0.50	7.50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85
.60	9.00	9.15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35
.70	10.50	10.65	10.80	10.95	11.10	11.25	11.40	11.55	11.70	11.85
.80	12.00	12.15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35
.90	13.50	13.65	13.80	13.95	14.10	14.25	14.40	14.55	14.70	14.85



TABLE 16.—For conversion of mean time into sidereal time.

s	m 0			m 1			m 2			m 3								
0	h	m	s	h	m	s	h	m	s	h	m	s	s	m	s	s	m	s
	0	0	0	6	5	15	12	10	29	18	15	44	0.00	0	0	0.50	3	3
1	0	6	5	6	11	20	12	16	34	18	21	49	0.01	0	4	0.51	3	6
2	0	12	10	6	17	25	12	22	40	18	27	54	0.02	0	7	0.52	3	10
3	0	18	16	6	23	30	12	28	45	18	33	59	0.03	0	11	0.53	3	14
4	0	24	21	6	29	36	12	34	50	18	40	5	0.04	0	15	0.54	3	17
5	0	30	26	6	35	41	12	40	56	18	46	10	0.05	0	18	0.55	3	21
6	0	36	31	6	41	46	12	47	1	18	52	15	0.06	0	22	0.56	3	25
7	0	42	37	6	47	51	12	53	6	18	58	20	0.07	0	26	0.57	3	28
8	0	48	42	6	53	56	12	59	11	19	4	26	0.08	0	29	0.58	3	32
9	0	54	47	7	0	2	13	5	16	19	10	31	0.09	0	33	0.59	3	35
10	1	0	52	7	6	7	13	11	21	19	16	36	0.10	0	37	0.60	3	39
11	1	6	58	7	12	12	13	17	27	19	22	41	0.11	0	40	0.61	3	43
12	1	13	8	7	18	17	13	23	32	19	28	47	0.12	0	44	0.62	3	46
13	1	19	8	7	24	23	13	29	37	19	34	52	0.13	0	47	0.63	3	50
14	1	25	13	7	30	28	13	35	42	19	40	57	0.14	0	51	0.64	3	54
15	1	31	19	7	36	33	13	41	48	19	47	2	0.15	0	55	0.65	3	57
16	1	37	24	7	42	38	13	47	53	19	53	7	0.16	0	58	0.66	4	1
17	1	43	29	7	48	44	13	53	58	19	59	13	0.17	1	2	0.67	4	5
18	1	49	34	7	54	49	14	0	3	20	5	18	0.18	1	6	0.68	4	8
19	1	55	40	8	0	54	14	6	9	20	11	23	0.19	1	9	0.69	4	12
20	2	1	45	8	6	59	14	12	14	20	17	28	0.20	1	13	0.70	4	16
21	2	7	50	8	13	5	14	18	19	20	23	34	0.21	1	17	0.71	4	19
22	2	13	55	8	19	10	14	24	24	20	29	39	0.22	1	20	0.72	4	23
23	2	20	1	8	25	15	14	30	30	20	35	44	0.23	1	24	0.73	4	27
24	2	26	6	8	31	20	14	36	35	20	41	49	0.24	1	28	0.74	4	30
25	2	32	11	8	37	26	14	42	40	20	47	55	0.25	1	31	0.75	4	34
26	2	38	16	8	43	31	14	48	45	20	54	0	0.26	1	35	0.76	4	38
27	2	44	22	8	49	36	14	54	51	21	0	5	0.27	1	39	0.77	4	41
28	2	50	27	8	55	41	15	0	56	21	6	10	0.28	1	42	0.78	4	45
29	2	56	32	9	1	47	15	7	1	21	12	16	0.29	1	46	0.79	4	49
30	3	2	37	9	7	52	15	13	6	21	18	21	0.30	1	50	0.80	4	52
31	3	8	43	9	13	57	15	19	12	21	24	26	0.31	1	53	0.81	4	56
32	3	14	48	9	20	2	15	25	17	21	30	31	0.32	1	57	0.82	4	59
33	3	20	53	9	26	8	15	31	22	21	36	37	0.33	2	1	0.83	5	3
34	3	26	58	9	32	13	15	37	27	21	42	42	0.34	2	4	0.84	5	7
35	3	33	3	9	38	18	15	43	33	21	48	47	0.35	2	8	0.85	5	10
36	3	39	9	9	44	23	15	49	38	21	54	52	0.36	2	11	0.86	5	14
37	3	45	14	9	50	28	15	55	43	22	0	58	0.37	2	15	0.87	5	18
38	3	51	19	9	56	34	16	1	48	22	7	3	0.38	2	19	0.88	5	21
39	3	57	24	10	2	39	16	7	54	22	13	8	0.39	2	22	0.89	5	25
40	4	3	30	10	8	44	16	13	59	22	19	13	0.40	2	26	0.90	5	29
41	4	9	35	10	14	49	16	20	4	22	25	19	0.41	2	30	0.91	5	32
42	4	15	40	10	20	55	16	26	9	22	31	24	0.42	2	33	0.92	5	36
43	4	21	45	10	27	0	16	32	14	22	37	29	0.43	2	37	0.93	5	40
44	4	27	51	10	33	5	16	38	20	22	43	34	0.44	2	41	0.94	5	43
45	4	33	56	10	39	10	16	44	25	22	49	39	0.45	2	44	0.95	5	47
46	4	40	1	10	45	16	16	50	30	22	55	45	0.46	2	48	0.96	5	51
47	4	46	6	10	51	21	16	56	35	23	1	50	0.47	2	52	0.97	5	54
48	4	52	12	10	57	26	17	2	41	23	7	55	0.48	2	55	0.98	5	58
49	4	58	17	11	3	31	17	8	46	23	14	0	0.49	2	59	0.99	6	2
50	5	4	22	11	9	37	17	14	51	23	20	6	0.50	3	3	1.00	6	5
51	5	10	27	11	15	42	17	20	56	23	26	11	<div>Example: Let the given mean time be 14<sup>h</sup> 57<sup>m</sup> 32<sup>s</sup>. 56. The table gives first for 14<sup>h</sup> 54<sup>m</sup> = 51<sup>s</sup>. 2<sup>m</sup> 27<sup>s</sup>. then for 2 41.56 0.44 2 27.44 The sum 14<sup>h</sup> 57<sup>m</sup> 32<sup>s</sup>. 56 + 2<sup>m</sup> 27<sup>s</sup>. 44 = 15<sup>h</sup> 0<sup>m</sup> 0<sup>s</sup> is the required sidereal time.</div>					
52	5	16	33	11	21	47	17	27	2	23	32	16						
53	5	22	38	11	27	52	17	33	7	23	38	21						
54	5	28	43	11	33	58	17	39	12	23	44	27						
55	5	34	48	11	40	3	17	45	17	23	50	32						
56	5	40	54	11	46	8	17	51	23	23	56	37						
57	5	46	59	11	52	13	17	57	28	24	2	42						
58	5	53	4	11	58	19	18	3	33	24	8	48						
59	5	59	9	12	4	24	18	9	38	24	14	53						
60	6	5	15	12	10	29	18	15	44	24	20	58						

TABLE 17.—For conversion of sidereal time into mean time.

s	m 0			m 1			m 2			m 3						
0	h	m	s	h	m	s	h	m	s	h	m	s	s	m	s	s
	0	0	0	6	6	15	12	12	29	18	18	44	0.00	0	0	0.50
1	0	6	6	6	12	21	12	18	35	18	24	50	0.01	0	4	0.51
2	0	12	12	6	18	27	12	24	42	18	30	56	0.02	0	7	0.52
3	0	18	19	6	24	33	12	30	48	18	37	2	0.03	0	11	0.53
4	0	24	25	6	30	40	12	36	54	18	43	9	0.04	0	15	0.54
5	0	30	31	6	36	46	12	43	0	18	49	15	0.05	0	18	0.55
6	0	36	37	6	42	52	12	49	7	18	55	21	0.06	0	22	0.56
7	0	42	44	6	48	58	12	55	13	19	1	27	0.07	0	26	0.57
8	0	48	50	6	55	4	13	1	19	19	7	34	0.08	0	29	0.58
9	0	54	56	7	1	11	13	7	25	19	13	40	0.09	0	33	0.59
10	1	1	2	7	7	17	13	13	31	19	19	46	0.10	0	37	0.60
11	1	7	9	7	13	23	13	19	38	19	25	52	0.11	0	40	0.61
12	1	13	15	7	19	29	13	25	44	19	31	59	0.12	0	44	0.62
13	1	19	21	7	25	36	13	31	50	19	38	5	0.13	0	47	0.63
14	1	25	27	7	31	42	13	37	56	19	44	11	0.14	0	51	0.64
15	1	31	34	7	37	48	13	44	3	19	50	17	0.15	0	55	0.65
16	1	37	40	7	43	54	13	50	9	19	56	23	0.16	0	59	0.66
17	1	43	46	7	50	1	13	56	15	20	2	30	0.17	1	2	0.67
18	1	49	52	7	56	7	14	2	21	20	8	36	0.18	1	6	0.68
19	1	55	59	8	2	13	14	8	28	20	14	42	0.19	1	10	0.69
20	2	2	5	8	8	19	14	14	34	20	20	48	0.20	1	13	0.70
21	2	8	11	8	14	26	14	20	40	20	26	55	0.21	1	17	0.71
22	2	14	17	8	20	32	14	26	46	20	33	1	0.22	1	21	0.72
23	2	20	24	8	26	38	14	32	53	20	39	7	0.23	1	24	0.73
24	2	26	30	8	32	44	14	38	59	20	45	13	0.24	1	28	0.74
25	2	32	36	8	38	51	14	45	5	20	51	20	0.25	1	32	0.75
26	2	38	42	8	44	57	14	51	11	20	57	26	0.26	1	35	0.76
27	2	44	49	8	51	3	14	57	18	21	3	32	0.27	1	39	0.77
28	2	50	55	8	57	9	15	3	24	21	9	38	0.28	1	43	0.78
29	2	57	1	9	3	16	15	9	30	21	15	45	0.29	1	46	0.79
30	3	3	7	9	9	22	15	15	36	21	21	51	0.30	1	50	0.80
31	3	9	14	9	15	28	15	21	43	21	27	57	0.31	1	54	0.81
32	3	15	20	9	21	34	15	27	49	21	34	3	0.32	1	57	0.82
33	3	21	26	9	27	41	15	33	55	21	40	10	0.33	2	1	0.83
34	3	27	32	9	33	47	15	40	1	21	46	16	0.34	2	5	0.84
35	3	33	38	9	39	53	15	46	8	21	52	22	0.35	2	8	0.85
36	3	39	45	9	45	59	15	52	14	21	58	28	0.36	2	12	0.86
37	3	45	51	9	52	5	15	58	20	22	4	35	0.37	2	16	0.87
38	3	51	57	9	58	12	16	4	26	22	10	41	0.38	2	19	0.88
39	3	58	3	10	4	18	16	10	33	22	16	47	0.39	2	23	0.89
40	4	4	10	10	10	24	16	16	39	22	22	53	0.40	2	26	0.90
41	4	10	16	10	16	30	16	22	45	22	29	0	0.41	2	30	0.91
42	4	16	22	10	22	37	16	28	51	22	35	6	0.42	2	34	0.92
43	4	22	28	10	28	43	16	34	57	22	41	12	0.43	2	37	0.93
44	4	28	35	10	34	49	16	41	4	22	47	18	0.44	2	41	0.94
45	4	34	41	10	40	56	16	47	10	22	53	24	0.45	2	45	0.95
46	4	40	47	10	47	2	16	53	16	22	59	31	0.46	2	48	0.96
47	4	46	53	10	53	8	16	59	22	23	5	37	0.47	2	52	0.97
48	4	53	0	10	59	14	17	5	29	23	11	43	0.48	2	56	0.98
49	4	59	6	11	5	20	17	11	35	23	17	49	0.49	2	59	0.99
50	5	5	12	11	11	27	17	17	41	23	23	56	0.50	3	3	1.00
51	5	11	18	11	17	33	17	23	47	23	30	2	<p>Example: Given <math>15^h 0^m 0^s</math>.  The table gives  first for <math>14^h 57^m 18^s</math> <math>2^m 27^s</math>  then for <math>2^m 42^s</math> <math>0.44</math>  <math>15^h 0^m 0^s - 2^m 27^s 44^s = 14^h 57^m 32^s 56</math>  is the required mean time.</p>			
52	5	17	25	11	23	39	17	29	54	23	36	8				
53	5	23	31	11	29	45	17	36	0	23	42	14				
54	5	29	37	11	35	52	17	42	6	23	48	21				
55	5	35	43	11	41	58	17	48	12	23	54	27				
56	5	41	50	11	48	4	17	54	19	24	0	33				
57	5	47	56	11	54	10	18	0	25	24	6	39				
58	5	54	2	12	0	17	18	6	31	24	12	46				
59	6	0	8	12	6	23	18	12	37	24	18	52				
60	6	6	15	12	12	29	18	18	44	24	24	58				

TABLE 18.—*For interconversion of feet and decimals of a mile.*

Feet.	Miles.	Feet.	Miles.	Feet.	Miles.	Feet.	Miles.
53	.01	1373	.26	2693	.51	4013	.76
106	.02	1426	.27	2746	.52	4066	.77
158	.03	1478	.28	2798	.53	4118	.78
211	.04	1531	.29	2851	.54	4171	.79
264	.05	1584	.30	2904	.55	4224	.80
317	.06	1637	.31	2957	.56	4277	.81
370	.07	1690	.32	3010	.57	4330	.82
422	.08	1742	.33	3062	.58	4382	.83
475	.09	1795	.34	3115	.59	4435	.84
528	.10	1848	.35	3168	.60	4488	.85
581	.11	1901	.36	3221	.61	4541	.86
634	.12	1954	.37	3274	.62	4594	.87
686	.13	2006	.38	3326	.63	4646	.88
739	.14	2059	.39	3379	.64	4699	.89
792	.15	2112	.40	3432	.65	4752	.90
845	.16	2165	.41	3485	.66	4805	.91
898	.17	2218	.42	3538	.67	4858	.92
950	.18	2270	.43	3590	.68	4910	.93
1003	.19	2323	.44	3643	.69	4963	.94
1056	.20	2376	.45	3696	.70	5016	.95
1109	.21	2429	.46	3749	.71	5069	.96
1162	.22	2482	.47	3802	.72	5122	.97
1214	.23	2534	.48	3854	.73	5174	.98
1267	.24	2587	.49	3907	.74	5227	.99
1320	.25	2640	.50	3960	.75	5280	1.00

TABLE 19.—*Converting wheel revolutions into hundredths of a mile.*

[Prepared by J. H. Jennings.]

[Scale divisions outside; revolutions inside.]

## CIRCUMFERENCE OF WHEEL, 9.5 FEET

0	1	2	3	4	5	6	7	8	9	10
0	6	11	17	22	28	33	39	44	50	56
10	61	67	72	78	83	89	94	100	105	111
20	117	122	128	133	139	144	150	155	161	167
30	172	178	183	189	194	200	205	211	216	222
40	228	233	239	244	250	255	261	266	272	278
50	283	289	294	300	305	311	316	322	328	333
60	339	344	350	355	361	366	372	378	383	389
70	394	400	405	411	416	422	428	433	439	444
80	450	455	461	466	472	478	483	489	494	500
90	506	511	516	522	528	533	539	544	550	555

## CIRCUMFERENCE OF WHEEL, 9.6 FEET

0	1	2	3	4	5	6	7	8	9	10
0	5	11	16	22	27	33	38	44	50	55
10	60	66	72	77	82	88	93	99	105	110
20	116	121	126	132	137	143	148	154	159	165
30	171	177	182	188	193	199	204	209	215	220
40	225	231	236	242	247	253	258	264	270	275
50	281	286	292	297	303	308	314	319	325	330
60	336	341	347	352	358	363	369	374	380	385
70	391	396	402	407	413	418	424	429	435	440
80	446	451	457	462	468	473	479	484	490	495
90	501	506	512	517	523	528	534	539	544	550

## CIRCUMFERENCE OF WHEEL, 9.7 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	11	16	22	27	33	38	44	49	54
10	60	65	71	76	81	87	92	98	103	109
20	114	120	125	131	136	142	147	152	158	163
30	169	174	179	185	190	196	201	206	212	218
40	223	228	234	239	245	250	256	261	267	272
50	277	283	288	294	299	305	310	316	321	326
60	331	337	342	348	353	359	364	370	376	381
70	386	392	397	403	408	414	419	424	429	435
80	441	446	451	457	462	468	473	479	484	490
90	495	500	506	511	517	522	528	533	539	544

TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

## CIRCUMFERENCE OF WHEEL, 9.8 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	11	16	22	27	32	38	43	49	54
10	59	65	70	75	81	86	91	97	102	108
20	113	119	124	129	135	140	145	151	156	162
30	167	172	178	183	189	194	199	205	211	216
40	221	226	231	237	242	248	253	259	265	270
50	275	280	286	291	296	302	307	313	318	324
60	329	334	339	345	350	356	361	366	372	377
70	383	388	394	400	405	410	415	421	426	431
80	437	442	447	453	458	464	469	474	480	485
90	490	496	501	506	512	517	522	528	533	539

## CIRCUMFERENCE OF WHEEL, 9.9 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	11	16	21	27	32	37	43	48	53
10	59	64	69	75	80	85	91	96	101	107
20	112	117	122	128	133	138	144	149	155	160
30	165	170	176	181	186	192	197	203	208	213
40	219	224	229	235	240	245	251	256	261	267
50	272	277	282	288	293	298	304	309	314	320
60	325	330	336	341	346	352	357	362	368	373
70	378	384	389	394	400	405	410	416	421	426
80	432	437	442	448	453	458	464	469	474	480
90	485	490	496	501	506	512	517	522	528	533

## CIRCUMFERENCE OF WHEEL, 10 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	11	16	21	26	32	37	42	48	53
10	58	63	69	75	80	85	90	96	101	106
20	111	116	121	127	132	137	143	148	153	158
30	164	169	174	180	185	190	195	201	206	211
40	217	222	227	232	238	243	248	253	259	264
50	269	275	280	285	290	296	301	306	311	317
60	322	327	333	338	343	349	354	359	364	370
70	375	380	385	391	396	401	406	412	417	422
80	428	433	438	444	449	454	459	465	470	475
90	481	486	491	496	502	507	512	517	523	528

TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

## CIRCUMFERENCE OF WHEEL, 10.1 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	16	21	26	31	36	41	47	52
10	58	63	68	73	79	84	89	94	100	105
20	110	115	121	126	131	136	142	147	152	157
30	162	167	173	178	183	188	193	199	204	209
40	214	220	226	231	236	241	247	252	257	262
50	267	272	277	282	288	293	298	303	308	314
60	319	324	329	334	340	345	350	355	361	366
70	371	376	381	386	392	397	402	408	413	418
80	424	429	434	439	445	450	455	460	466	471
90	476	481	486	492	497	502	507	513	518	523

## CIRCUMFERENCE OF WHEEL, 10.2 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	16	21	26	31	36	41	47	52
10	57	62	67	73	78	83	88	93	98	104
20	109	114	119	124	130	135	140	145	150	155
30	161	166	171	176	181	186	191	197	202	207
40	212	218	224	229	234	239	244	249	254	259
50	264	269	275	280	285	290	295	300	306	311
60	316	321	326	332	337	342	347	352	357	363
70	368	373	378	383	388	394	399	404	409	414
80	419	425	430	435	440	446	451	456	461	466
90	471	476	481	487	492	497	503	508	513	518

## CIRCUMFERENCE OF WHEEL, 10.3 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	26	31	36	41	46	51
10	56	62	67	72	77	82	87	92	97	103
20	108	113	118	123	128	133	138	144	149	154
30	159	164	169	174	180	185	190	195	200	204
40	209	214	219	224	230	235	240	245	250	256
50	262	267	272	277	282	287	292	297	303	308
60	313	318	323	328	333	338	344	349	354	359
70	364	369	374	380	385	390	395	400	405	410
80	416	421	426	431	436	441	446	451	457	462
90	467	472	477	482	487	492	498	503	508	513

TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

## CIRCUMFERENCE OF WHEEL, 10.4 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	25	30	36	41	46	51
10	56	61	66	71	76	81	86	91	97	102
20	107	112	117	122	127	132	137	142	147	152
30	157	163	168	173	178	183	188	193	198	203
40	208	213	218	223	228	233	238	244	249	254
50	259	264	269	274	279	284	289	295	300	305
60	310	315	320	325	330	335	340	345	350	356
70	361	366	371	376	381	386	391	396	401	406
80	411	416	421	426	432	437	442	447	452	457
90	462	467	472	478	483	488	493	498	503	508

## CIRCUMFERENCE OF WHEEL, 10.5 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	25	30	35	40	45	50
10	55	60	65	70	75	80	85	90	95	101
20	106	111	116	121	126	131	136	141	146	151
30	156	161	166	171	176	181	186	191	196	201
40	206	211	216	221	226	231	236	241	246	251
50	257	262	267	272	277	282	287	292	297	302
60	307	312	317	322	327	332	337	342	347	352
70	357	362	367	372	377	382	387	392	397	402
80	407	412	417	422	428	433	438	443	448	453
90	458	463	468	473	478	483	488	493	498	503

## CIRCUMFERENCE OF WHEEL, 10.6 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	25	30	35	40	45	50
10	55	60	65	70	75	80	85	90	95	100
20	105	110	115	120	125	130	135	140	144	149
30	154	159	164	169	174	179	184	189	194	199
40	204	209	214	219	224	229	234	239	244	249
50	254	259	264	269	274	279	284	289	294	299
60	304	309	314	319	324	329	334	339	344	349
70	354	359	364	369	374	379	384	389	393	398
80	403	408	413	418	423	428	433	438	443	448
90	453	458	463	468	473	478	483	488	493	498

TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

## CIRCUMFERENCE OF WHEEL, 10.7 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	25	30	35	40	44	49
10	54	59	64	69	74	79	84	89	94	99
20	104	109	114	119	123	128	133	138	143	148
30	153	158	163	168	173	178	183	188	193	198
40	203	207	212	217	222	227	232	237	242	247
50	252	257	262	267	272	277	282	287	291	296
60	301	306	311	316	321	326	331	336	341	346
70	351	356	361	366	371	375	380	385	390	395
80	400	405	410	415	420	425	430	435	440	445
90	450	454	459	464	469	474	479	484	489	494

## CIRCUMFERENCE OF WHEEL, 10.8 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	24	29	34	39	44	49
10	54	59	64	68	73	78	83	88	93	98
20	103	108	113	118	122	127	132	137	142	147
30	152	156	161	166	171	176	181	186	191	196
40	200	205	210	215	220	225	230	235	240	244
50	249	254	259	264	269	274	279	283	288	293
60	298	303	308	313	318	323	328	332	337	341
70	346	351	356	361	366	371	376	381	386	391
80	396	401	406	411	416	421	425	430	435	440
90	445	450	455	460	464	469	474	479	484	489

## CIRCUMFERENCE OF WHEEL, 10.9 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	19	24	29	34	39	44	48
10	53	58	63	68	73	78	82	87	92	97
20	102	107	111	116	121	126	131	136	141	145
30	150	155	160	165	170	175	179	184	189	193
40	197	202	207	212	217	222	227	232	237	242
50	247	252	257	261	266	271	276	281	286	290
60	295	300	305	310	315	319	324	329	334	339
70	344	349	353	358	363	368	373	378	383	387
80	392	397	402	407	411	416	421	426	431	436
90	440	445	450	455	460	465	469	474	479	484



TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

## CIRCUMFERENCE OF WHEEL, 11.0 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	14	19	24	29	33	38	43	48
10	53	57	62	67	72	76	81	86	91	96
20	101	106	110	115	119	124	129	134	139	144
30	149	154	158	163	168	173	178	182	187	192
40	197	202	206	211	216	221	225	230	235	240
50	245	250	254	259	263	268	273	278	283	288
60	293	298	302	307	312	317	321	326	331	336
70	341	346	350	355	460	365	369	374	379	384
80	389	394	398	403	408	413	417	422	427	432
90	437	442	446	451	456	461	465	470	475	480

## CIRCUMFERENCE OF WHEEL, 11.1 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	14	19	24	29	33	38	43	48
10	52	57	62	66	71	76	81	85	90	95
20	100	104	109	114	119	124	129	133	138	143
30	147	152	157	161	166	171	176	180	185	190
40	195	200	205	209	214	219	224	229	233	238
50	243	248	252	257	262	267	271	276	281	286
60	290	295	300	305	309	314	319	324	328	333
70	338	343	347	352	357	362	367	371	376	381
80	386	390	395	400	405	409	414	419	424	428
90	433	438	443	447	452	457	462	466	471	476

## CIRCUMFERENCE OF WHEEL, 11.2 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	14	19	24	28	33	38	42	47
10	52	57	62	66	71	76	80	84	89	94
20	99	104	108	113	117	122	127	132	137	141
30	146	151	155	160	165	169	174	179	184	188
40	193	198	203	207	212	217	222	226	231	236
50	240	245	250	255	259	264	269	274	278	283
60	287	292	297	302	307	312	316	321	326	330
70	334	339	344	348	353	358	363	367	372	377
80	382	386	391	396	400	405	410	415	419	424
90	429	434	438	443	447	452	456	461	466	471

TABLE 19.—*Converting wheel revolutions into hundredths of a mile*—Continued.

## CIRCUMFERENCE OF WHEEL, 11.3 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	14	19	23	28	33	37	42	47
10	51	56	61	65	70	74	79	83	88	93
20	98	103	108	112	117	122	126	131	135	140
30	145	150	154	159	164	168	173	178	183	187
40	191	196	200	205	210	215	220	224	229	234
50	238	243	248	252	257	261	266	271	276	280
60	285	290	294	299	304	308	313	318	322	327
70	332	336	341	346	350	355	360	364	370	374
80	378	383	387	392	397	402	406	411	416	420
90	425	430	434	439	444	448	453	458	462	467

## CIRCUMFERENCE OF WHEEL, 11.4 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	14	18	23	28	32	37	42	46
10	50	56	60	65	69	74	79	83	88	93
20	97	102	107	111	116	120	125	129	134	139
30	143	148	152	157	162	167	171	176	180	185
40	190	195	199	204	208	213	217	222	227	231
50	236	241	245	250	255	259	264	269	273	278
60	282	287	291	296	301	306	310	315	319	324
70	329	333	338	343	347	352	357	361	366	370
80	375	380	384	389	394	398	403	407	412	417
90	421	426	431	435	440	445	449	454	458	463

## CIRCUMFERENCE OF WHEEL, 11.5 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	14	18	23	28	32	37	41	46
10	50	55	59	63	68	72	77	82	87	92
20	96	101	105	110	114	119	124	128	133	138
30	142	147	151	156	161	165	170	174	179	184
40	188	193	197	202	207	211	216	220	225	229
50	234	239	243	248	252	257	262	266	271	275
60	280	285	289	294	298	303	308	312	317	321
70	326	331	335	340	344	349	353	358	363	367
80	372	377	381	386	390	395	399	404	409	413
90	418	422	427	432	436	441	445	450	454	459

TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

## CIRCUMFERENCE OF WHEEL, 11.6 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	14	18	23	27	32	36	41	46
10	50	55	59	64	68	73	77	82	87	91
20	96	100	104	109	114	118	123	127	132	136
30	141	146	150	155	159	164	168	173	178	182
40	187	191	196	200	205	209	214	218	223	227
50	232	237	241	246	250	255	259	264	269	273
60	278	282	287	291	296	300	305	309	314	318
70	323	328	332	337	341	346	350	355	360	364
80	369	373	378	382	387	391	396	400	405	410
90	414	419	423	428	432	437	441	446	450	455

## CIRCUMFERENCE OF WHEEL, 11.7 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	13	18	23	27	32	36	41	45
10	50	54	59	63	68	72	77	81	86	90
20	95	99	104	108	113	117	122	126	131	135
30	140	144	149	153	158	162	167	171	176	180
40	185	189	194	198	203	207	212	217	221	225
50	230	235	239	244	248	253	257	262	266	271
60	275	280	284	289	293	298	302	307	311	316
70	320	325	329	334	338	343	347	352	356	361
80	365	370	374	379	383	388	392	397	401	406
90	410	415	419	424	428	433	437	442	446	451

## CIRCUMFERENCE OF WHEEL, 11.8 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	4	9	13	18	22	27	32	36	40	45
10	49	53	58	62	67	72	76	80	85	89
20	94	98	103	107	112	116	121	125	130	134
30	139	143	148	152	157	161	165	170	174	179
40	183	187	192	197	201	206	210	215	219	223
50	228	232	237	241	246	250	255	259	264	268
60	273	277	282	286	291	295	300	304	309	313
70	317	321	326	330	335	339	344	348	353	358
80	362	367	372	376	380	385	389	393	398	402
90	407	411	416	420	425	429	434	438	443	447

TABLE 19.—*Converting wheel revolutions into hundredths of a mile*—Continued.

## CIRCUMFERENCE OF WHEEL, 11.9 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	4	9	13	18	22	27	31	35	40	44
10	49	53	58	62	67	71	76	80	84	89
20	93	98	102	107	111	115	120	124	129	133
30	138	142	146	151	155	160	164	169	173	178
40	182	187	191	195	200	204	209	213	218	222
50	226	231	235	240	244	249	253	258	262	266
60	271	275	280	284	289	293	298	302	306	311
70	315	320	324	329	333	338	342	346	350	355
80	360	364	369	373	377	382	386	391	395	399
90	404	409	413	417	422	426	431	435	440	444

## CIRCUMFERENCE OF WHEEL, 12 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	4	9	13	18	22	26	31	35	40	44
10	48	53	57	62	66	70	75	79	84	88
20	91	96	100	104	109	113	118	122	128	132
30	136	141	145	150	154	158	163	168	172	176
40	180	185	189	194	198	202	207	211	216	220
50	224	229	233	238	242	246	251	255	260	264
60	268	273	277	281	286	290	295	299	304	308
70	312	317	321	326	330	334	339	343	348	352
80	356	361	365	370	374	378	383	388	392	396
90	400	405	409	414	418	422	427	431	436	440

## CIRCUMFERENCE OF WHEEL, 12.1 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	4	9	13	17	22	26	31	35	39	44
10	48	53	57	61	66	70	75	79	83	87
20	91	96	100	105	109	113	118	122	126	131
30	135	139	144	148	153	157	161	165	170	174
40	178	183	187	192	196	201	205	209	214	218
50	222	227	231	235	240	244	249	253	257	262
60	266	270	275	279	283	288	292	296	301	305
70	310	314	318	323	327	331	336	340	344	349
80	353	358	362	366	370	375	379	384	388	392
90	397	401	405	410	414	419	423	427	432	436

TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

CIRCUMFERENCE OF WHEEL, 12.2 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	4	9	13	17	22	26	30	35	39	43
10	48	52	56	61	65	69	74	78	82	87
20	91	95	100	104	108	113	117	121	126	130
30	134	138	143	147	151	156	160	165	169	173
40	178	182	186	191	195	199	204	208	212	216
50	221	225	230	234	238	243	247	251	256	260
60	264	268	273	277	281	286	290	294	299	303
70	307	312	316	320	325	329	333	338	342	346
80	351	356	359	364	368	372	377	381	385	390
90	395	399	404	408	412	417	421	425	429	433

After measuring wheel use nearest tenth for size of wheel.

TABLE 20.—*Five-place logarithms of natural numbers.*

[Fractional change in a number corresponding to a change in its logarithm.]

Computed from the formula,

$$\frac{\Delta N}{N} = \frac{\Delta \log N}{\mu},$$

 $\mu$ =modulus of common logarithms = 0.43429448.

For $\Delta \log N$ = 1 unit in	$\frac{\Delta N}{N}$	For $\Delta \log N$ = 4 units in	$\frac{\Delta N}{N}$ (in round numbers)
Fourth place.....	4343	Fourth place.....	1000
Fifth place .....	43435	Fifth place .....	10000
Sixth place .....	434354	Sixth place .....	100000
Seventh place.....	4343545	Seventh place .....	1000000

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L. 0	1	2	3	4	5	6	7	8	9
0	00 000	30 103	47 712	60 206	69 897	77 815	84 510	90 309	95 424	
1	00 000	04 139	07 918	11 394	14 613	17 609	20 412	23 045	25 527	27 875
2	30 103	32 222	34 242	36 173	38 021	39 794	41 497	43 136	44 716	46 240
3	47 712	49 136	50 515	51 851	53 148	54 407	55 630	56 820	57 978	59 106
4	60 206	61 278	62 325	63 347	64 345	65 321	66 276	67 210	68 124	69 020
5	69 897	70 757	71 600	72 428	73 239	74 036	74 819	75 587	76 343	77 085
6	77 815	78 533	79 239	79 934	80 618	81 291	81 954	82 607	83 251	83 885
7	84 510	85 126	85 733	86 332	86 923	87 506	88 081	88 649	89 209	89 763
8	90 309	90 849	91 381	91 908	92 428	92 942	93 450	93 952	94 448	94 939
9	95 424	95 904	96 379	96 848	97 313	97 772	98 227	98 677	99 123	99 564
10	00 000	00 432	00 860	01 284	01 703	02 119	02 531	02 938	03 342	03 743
11	04 139	04 532	04 922	05 308	05 690	06 070	06 446	06 819	07 188	07 555
12	07 918	08 279	08 636	08 991	09 342	09 691	10 037	10 380	10 721	11 059
13	11 394	11 727	12 057	12 385	12 710	13 033	13 354	13 672	13 988	14 301
14	14 613	14 922	15 229	15 534	15 836	16 137	16 435	16 732	17 026	17 319
15	17 609	17 898	18 184	18 469	18 752	19 033	19 312	19 590	19 866	20 140
16	20 412	20 683	20 952	21 219	21 484	21 748	22 011	22 272	22 531	22 789
17	23 045	23 300	23 553	23 805	24 055	24 304	24 551	24 797	25 042	25 285
18	25 527	25 768	26 007	26 245	26 482	26 717	26 951	27 184	27 416	27 646
19	27 875	28 103	28 330	28 556	28 780	29 003	29 226	29 447	29 667	29 885
20	30 103	30 320	30 535	30 750	30 963	31 175	31 387	31 597	31 806	32 015
21	32 222	32 428	32 634	32 838	33 041	33 244	33 445	33 646	33 846	34 044
22	34 242	34 439	34 635	34 830	35 025	35 218	35 411	35 603	35 793	35 984
23	36 173	36 361	36 549	36 736	36 922	37 107	37 291	37 475	37 658	37 840
24	38 021	38 202	38 382	38 561	38 739	38 917	39 094	39 270	39 445	39 620
25	39 794	39 967	40 140	40 312	40 483	40 654	40 824	40 993	41 162	41 330
26	41 497	41 664	41 830	41 996	42 160	42 325	42 488	42 651	42 813	42 975
27	43 136	43 297	43 457	43 616	43 775	43 933	44 091	44 248	44 404	44 560
28	44 716	44 871	45 025	45 179	45 332	45 484	45 637	45 788	45 939	46 090
29	46 240	46 389	46 538	46 687	46 835	46 982	47 129	47 276	47 422	47 567
30	47 712	47 857	48 001	48 144	48 287	48 430	48 572	48 714	48 855	48 996
31	49 136	49 276	49 415	49 554	49 693	49 831	49 969	50 106	50 243	50 379
32	50 515	50 651	50 786	50 920	51 055	51 188	51 322	51 455	51 587	51 720
33	51 851	51 983	52 114	52 244	52 375	52 504	52 634	52 763	52 892	53 020
34	53 148	53 275	53 403	53 529	53 656	53 782	53 908	54 033	54 158	54 283
35	54 407	54 531	54 654	54 777	54 900	55 023	55 145	55 267	55 388	55 509
36	55 630	55 751	55 871	55 991	56 110	56 229	56 348	56 467	56 585	56 703
37	56 820	56 937	57 054	57 171	57 287	57 403	57 519	57 634	57 749	57 864
38	57 978	58 092	58 206	58 320	58 433	58 546	58 659	58 771	58 883	58 995
39	59 106	59 218	59 329	59 439	59 550	59 660	59 770	59 879	59 988	60 097
40	60 206	60 314	60 423	60 531	60 638	60 745	60 853	60 959	61 066	61 172
41	61 278	61 384	61 490	61 595	61 700	61 805	61 909	62 014	62 118	62 221
42	62 325	62 428	62 531	62 634	62 737	62 839	62 941	63 043	63 144	63 246
43	63 347	63 448	63 548	63 649	63 749	63 849	63 949	64 048	64 147	64 246
44	64 345	64 444	64 542	64 640	64 738	64 836	64 933	65 031	65 128	65 225
45	65 321	65 418	65 514	65 610	65 706	65 801	65 896	65 992	66 087	66 181
46	66 276	66 370	66 464	66 558	66 652	66 745	66 839	66 932	67 025	67 117
47	67 210	67 302	67 394	67 486	67 578	67 669	67 761	67 852	67 943	68 034
48	68 124	68 215	68 305	68 395	68 485	68 574	68 664	68 753	68 842	68 931
49	69 020	69 108	69 197	69 285	69 373	69 461	69 548	69 636	69 723	69 810
50	69 897	69 984	70 070	70 157	70 243	70 329	70 415	70 501	70 586	70 672
N.	L. 0	1	2	3	4	5	6	7	8	9
0° 1' = 60"	S. 4. 68 557	T. 4. 68 557				0° 5' = 300"	S. 4. 68 557	T. 4. 68 558		
0 2 = 120	4. 68 557	4. 68 557				0 6 = 360	4. 68 557	4. 68 558		
0 3 = 180	4. 68 557	4. 68 557				0 7 = 420	4. 68 557	4. 68 558		
0 4 = 240	4. 68 557	4. 68 558				0 8 = 480	4. 68 557	4. 68 558		

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L. 0	1	2	3	4	5	6	7	8	9
50	69 897	69 984	70 070	70 157	70 243	70 329	70 415	70 501	70 586	70 672
51	70 757	70 842	70 927	71 012	71 096	71 181	71 265	71 349	71 433	71 517
52	71 600	71 684	71 767	71 850	71 933	72 016	72 099	72 181	72 263	72 346
53	72 428	72 509	72 591	72 673	72 754	72 835	72 916	72 997	73 078	73 159
54	73 239	73 320	73 400	73 480	73 560	73 640	73 719	73 799	73 878	73 957
55	74 036	74 115	74 194	74 273	74 351	74 429	74 507	74 586	74 663	74 741
56	74 819	74 896	74 974	75 051	75 128	75 205	75 282	75 358	75 435	75 511
57	75 587	75 664	75 740	75 815	75 891	75 967	76 042	76 118	76 193	76 268
58	76 343	76 418	76 492	76 567	76 641	76 716	76 790	76 864	76 938	77 012
59	77 085	77 159	77 232	77 305	77 379	77 452	77 525	77 597	77 670	77 743
60	77 815	77 887	77 960	78 032	78 104	78 176	78 247	78 319	78 390	78 462
61	78 533	78 604	78 675	78 746	78 817	78 888	78 958	79 029	79 099	79 169
62	79 239	79 309	79 379	79 449	79 518	79 588	79 657	79 727	79 796	79 865
63	79 934	80 003	80 072	80 140	80 209	80 277	80 346	80 414	80 482	80 550
64	80 618	80 686	80 754	80 821	80 889	80 956	81 023	81 090	81 158	81 224
65	81 291	81 358	81 425	81 491	81 558	81 624	81 690	81 757	81 823	81 889
66	81 954	82 020	82 086	82 151	82 217	82 282	82 347	82 413	82 478	82 543
67	82 607	82 672	82 737	82 802	82 866	82 930	82 995	83 059	83 123	83 187
68	83 251	83 315	83 378	83 442	83 506	83 569	83 632	83 696	83 759	83 822
69	83 885	83 948	84 011	84 073	84 136	84 198	84 261	84 323	84 386	84 448
70	84 510	84 572	84 634	84 696	84 757	84 819	84 880	84 942	85 003	85 065
71	85 126	85 187	85 248	85 309	85 370	85 431	85 491	85 552	85 612	85 673
72	85 733	85 794	85 854	85 914	85 974	86 034	86 094	86 153	86 213	86 273
73	86 332	86 392	86 451	86 510	86 570	86 629	86 688	86 747	86 806	86 864
74	86 923	86 982	87 040	87 099	87 157	87 216	87 274	87 332	87 390	87 448
75	87 506	87 564	87 622	87 679	87 737	87 795	87 852	87 910	87 967	88 024
76	88 081	88 138	88 195	88 252	88 309	88 366	88 423	88 480	88 536	88 593
77	88 649	88 705	88 762	88 818	88 874	88 930	88 986	89 042	89 098	89 154
78	89 209	89 265	89 321	89 376	89 432	89 487	89 542	89 597	89 653	89 708
79	89 763	89 818	89 873	89 927	89 982	90 037	90 091	90 146	90 200	90 255
80	90 309	90 363	90 417	90 472	90 526	90 580	90 634	90 687	90 741	90 795
81	90 849	90 902	90 956	91 009	91 062	91 116	91 169	91 222	91 275	91 328
82	91 381	91 434	91 487	91 540	91 593	91 645	91 698	91 751	91 803	91 855
83	91 908	91 960	92 012	92 065	92 117	92 169	92 221	92 273	92 324	92 376
84	92 428	92 480	92 531	92 583	92 634	92 686	92 737	92 788	92 840	92 891
85	92 942	92 993	93 044	93 095	93 146	93 197	93 247	93 298	93 349	93 399
86	93 450	93 500	93 551	93 601	93 651	93 702	93 752	93 802	93 852	93 902
87	93 952	94 002	94 052	94 101	94 151	94 201	94 250	94 300	94 349	94 399
88	94 448	94 498	94 547	94 596	94 645	94 694	94 743	94 792	94 841	94 890
89	94 939	94 988	95 036	95 085	95 134	95 182	95 231	95 279	95 328	95 376
90	95 424	95 472	95 521	95 569	95 617	95 665	95 713	95 761	95 809	95 856
91	95 904	95 952	95 999	96 047	96 095	96 142	96 190	96 237	96 284	96 332
92	96 379	96 426	96 473	96 520	96 567	96 614	96 661	96 708	96 755	96 802
93	96 848	96 895	96 942	96 988	97 035	97 081	97 128	97 174	97 220	97 267
94	97 313	97 359	97 405	97 451	97 497	97 543	97 589	97 635	97 681	97 727
95	97 772	97 818	97 864	97 909	97 955	98 000	98 046	98 091	98 137	98 182
96	98 227	98 272	98 318	98 363	98 408	98 453	98 498	98 543	98 588	98 632
97	98 677	98 722	98 767	98 811	98 856	98 900	98 945	98 989	99 034	99 078
98	99 123	99 167	99 211	99 255	99 300	99 344	99 388	99 432	99 476	99 520
99	99 564	99 607	99 651	99 695	99 739	99 782	99 826	99 870	99 913	99 957
100	00 000	00 043	00 087	00 130	00 173	00 217	00 260	00 303	00 346	00 389
N.	L. 0	1	2	3	4	5	6	7	8	9
0° 9' = 540"	S. 4. 68 557	T. 4. 68 558				0° 13' = 780"	S. 4. 68 557	T. 4. 68 558		
0 10 = 600	4. 68 557	4. 68 558				0 14 = 840	4. 68 557	4. 68 558		
0 11 = 660	4. 68 557	4. 68 558				0 15 = 900	4. 68 557	4. 68 558		
0 12 = 720	4. 68 557	4. 68 558				0 16 = 960	4. 68 557	4. 68 558		



TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.	
100	00	000	043	087	130	173	217	260	303	346	389		
101		432	475	518	561	604	647	689	732	775	817	44 43 42	
102		860	903	945	988	030	072	115	157	199	242	1 4,4 4,3 4,2	
103	01	284	326	368	410	452	494	536	578	620	662	2 8,8 8,6 8,4	
104		703	745	787	828	870	912	953	995	036	078	3 13,2 12,9 12,6	
105	02	119	160	202	243	284	325	366	407	449	490	4 17,6 17,2 16,8	
106		531	572	612	653	694	735	776	816	857	898	5 22,0 21,5 21,0	
107		938	979	019	060	100	141	181	222	262	302	6 26,4 25,8 25,2	
108	03	342	383	423	463	503	543	583	623	663	703	7 30,8 30,1 29,4	
109		743	782	822	862	902	941	981	021	060	100	8 35,2 34,4 33,6	
110	04	139	179	218	258	297	336	376	415	454	493	9 39,6 38,7 37,8	
111		532	571	610	650	689	727	766	805	844	883	41 40 39	
112		922	961	999	038	077	115	154	192	231	269	1 4,1 4,0 3,9	
113	05	308	346	385	423	461	500	538	576	614	652	2 8,2 8,0 7,8	
114		690	729	767	805	843	881	918	956	994	032	3 12,3 12,0 11,7	
115	06	070	108	145	183	221	258	296	333	371	408	4 16,4 16,0 15,6	
116		446	483	521	558	595	633	670	707	744	781	5 20,5 20,0 19,5	
117		819	856	893	930	967	004	041	078	115	151	6 24,6 24,0 23,4	
118	07	188	225	262	298	335	372	408	445	482	518	7 28,7 28,0 27,2	
119		555	591	628	664	700	737	773	809	846	882	8 32,8 32,0 31,2	
120		918	954	990	027	063	099	135	171	207	243	9 36,9 36,0 35,1	
121	08	279	314	350	386	422	458	493	529	565	600	38 37 36	
122		636	672	707	743	778	814	849	884	920	955	1 3,8 3,7 3,6	
123		991	026	061	096	132	167	202	237	272	307	2 7,6 7,4 7,2	
124	09	342	377	412	447	482	517	552	587	621	656	3 11,4 11,1 10,8	
125		691	726	760	795	830	864	899	934	968	003	4 15,2 14,8 14,4	
126	10	037	072	106	140	175	209	243	278	312	346	5 19,0 18,5 18,0	
127		380	415	449	483	517	551	585	619	653	687	6 22,8 22,2 21,6	
128		721	755	789	823	857	890	924	958	992	025	7 26,6 25,9 25,2	
129	11	059	093	126	160	193	227	261	294	327	361	8 30,4 29,6 28,8	
130		394	428	461	494	528	561	594	628	661	694	9 34,2 33,3 32,4	
131		727	760	793	826	860	893	926	959	992	024	35 34 33	
132	12	057	090	123	156	189	222	254	287	320	352	1 3,5 3,4 3,3	
133		385	418	450	483	516	548	581	613	646	678	2 7,0 6,8 6,6	
134		710	743	775	808	840	872	905	937	969	001	3 10,5 10,2 9,9	
135	13	033	066	098	130	162	194	226	258	290	322	4 14,0 13,6 13,2	
136		354	386	418	450	481	513	545	577	609	640	5 17,5 17,0 16,5	
137		672	704	735	767	799	830	862	893	925	956	6 21,0 20,4 19,8	
138		988	019	051	082	114	145	176	208	239	270	7 24,5 23,8 23,1	
139	14	301	333	364	395	426	457	489	520	551	582	8 28,0 27,2 26,4	
140		613	644	675	706	737	768	799	829	860	891	9 31,5 30,6 29,7	
141		922	953	983	014	045	076	106	137	168	198	32 31 30	
142	15	229	259	290	320	351	381	412	442	473	503	1 3,2 3,1 3,0	
143		534	564	594	625	655	685	715	746	776	806	2 6,4 6,2 6,0	
144		836	866	897	927	957	987	017	047	077	107	3 9,6 9,3 9,0	
145	16	137	167	197	227	256	286	316	346	376	406	4 12,8 12,4 12,0	
146		435	465	495	524	554	584	613	643	673	702	5 16,0 15,5 15,0	
147		732	761	791	820	850	879	909	938	967	997	6 19,2 18,6 18,0	
148	17	026	056	085	114	143	173	202	231	260	289	7 22,4 21,7 21,0	
149		319	348	377	406	435	464	493	522	551	580	8 25,6 24,8 24,0	
150		609	638	667	696	725	754	782	811	840	869	9 28,8 27,9 27,0	
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.	
0° 16' = 960"	S. 4.	68	557	T. 4.	68	558	0° 21' = 1260"	S. 4.	68	557	T. 4.	68	558
0 17 = 1020	4.	68	557	4.	68	558	0 22 = 1320	4.	68	557	4.	68	558
0 18 = 1080	4.	68	557	4.	68	558	0 23 = 1380	4.	68	557	4.	68	558
0 19 = 1140	4.	68	557	4.	68	558	0 24 = 1440	4.	68	557	4.	68	558
0 20 = 1200	4.	68	557	4.	68	558	0 25 = 1500	4.	68	557	4.	68	558

TABLE 20.—Five-place logarithms of natural numbers.—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
150	17	609	638	667	696	725	754	782	811	840	869						
151		898	926	955	984	013	041	070	099	127	156	29 28					
152	18	184	213	241	270	298	327	355	384	412	441	1 2,9 2,8					
153		469	498	526	554	583	611	639	667	696	724	2 5,8 5,6					
154		752	780	808	837	865	893	921	949	977	005	3 8,7 8,4					
155	19	033	061	089	117	145	173	201	229	257	285	4 11,6 11,2					
156		312	340	368	396	424	451	479	507	535	562	5 14,5 14,0					
157		590	618	645	673	700	728	756	783	811	838	6 17,4 16,8					
158		866	893	921	948	976	003	030	058	085	112	7 20,3 19,6					
159	20	140	167	194	222	249	276	303	330	358	385	8 23,2 22,4					
160		412	439	466	493	520	548	575	602	629	656	9 26,1 25,2					
161		683	710	737	763	790	817	844	871	898	925	27 26					
162		952	978	005	032	059	085	112	139	165	192	1 2,7 2,6					
163	21	219	245	272	299	325	352	378	405	431	458	2 5,4 5,2					
164		484	511	537	564	590	617	643	669	696	722	3 8,1 7,8					
165		748	775	801	827	854	880	906	932	958	985	4 10,8 10,4					
166	22	011	037	063	089	115	141	167	194	220	246	5 13,5 13,0					
167		272	298	324	350	376	401	427	453	479	505	6 16,2 15,6					
168		531	557	583	608	634	660	686	712	737	763	7 18,9 18,2					
169		789	814	840	866	891	917	943	968	994	019	8 21,6 20,8					
170	23	045	070	096	121	147	172	198	223	249	274	9 24,3 23,4					
171		300	325	350	376	401	426	452	477	502	528	25					
172		553	578	603	629	654	679	704	729	754	779	1 2,5					
173		805	830	855	880	905	930	955	980	005	030	2 5,0					
174	24	055	080	105	130	155	180	204	229	254	279	3 7,5					
175		304	329	353	378	403	428	452	477	502	527	4 10,0					
176		551	576	601	625	650	674	699	724	748	773	5 12,5					
177		797	822	846	871	895	920	944	969	993	018	6 15,0					
178	25	042	066	091	115	139	164	188	212	237	261	7 17,5					
179		285	310	334	358	382	406	431	455	479	503	8 20,0					
180		527	551	575	600	624	648	672	696	720	744	9 22,5					
181		768	792	816	840	864	888	912	935	959	983	24 23					
182	26	007	031	055	079	102	126	150	174	198	221	1 2,4 2,3					
183		245	269	293	316	340	364	387	411	435	458	2 4,8 4,6					
184		482	505	529	553	576	600	623	647	670	694	3 7,2 6,9					
185		717	741	764	788	811	834	858	881	905	928	4 9,6 9,2					
186		951	975	998	021	045	068	091	114	138	161	5 12,0 11,5					
187	27	184	207	231	254	277	300	323	346	370	393	6 14,4 13,8					
188		416	439	462	485	508	531	554	577	600	623	7 16,8 16,1					
189		646	669	692	715	738	761	784	807	830	852	8 19,2 18,4					
190		875	898	921	944	967	989	012	035	058	081	9 21,6 20,7					
191	28	103	126	149	171	194	217	240	262	285	307	22 21					
192		330	353	375	398	421	443	466	488	511	533	1 2,2 2,1					
193		556	578	601	623	646	668	691	713	735	758	2 4,4 4,2					
194		780	803	825	847	870	892	914	937	959	981	3 6,6 6,3					
195	29	003	026	048	070	092	115	137	159	181	203	4 8,8 8,4					
196		226	248	270	292	314	336	358	380	403	425	5 11,0 10,5					
197		447	469	491	513	535	557	579	601	623	645	6 13,2 12,6					
198		667	688	710	732	754	776	798	820	842	863	7 15,4 14,7					
199		885	907	929	951	973	994	016	038	060	081	8 17,6 16,8					
200	30	103	125	146	168	190	211	233	255	276	298	9 19,8 18,9					
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
0° 25' = 1500"	S.	4.	68	557	T.	4.	68	558	0° 30' = 1800"	S.	4.	68	557	T.	4.	68	559
0 26 = 1560		4.	68	557		4.	68	558	0 31 = 1860		4.	68	557		4.	68	559
0 27 = 1620		4.	68	557		4.	68	558	0 32 = 1920		4.	68	557		4.	68	559
0 28 = 1680		4.	68	557		4.	68	558	0 33 = 1980		4.	68	557		4.	68	559
0 29 = 1740		4.	68	557		4.	68	558	0 34 = 2040		4.	68	557		4.	68	559

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.						
200	30	103	125	146	168	190	211	233	255	276	298							
201		320	341	363	384	406	428	449	471	492	514	22 21						
202		535	557	578	600	621	643	664	686	707	728	1 2.2 2.1						
203		750	771	792	814	835	856	878	899	920	942	2 4.4 4.2						
204		963	984	1006	1027	1048	1069	1091	1112	1133	1154	3 6.6 6.3						
205	31	175	197	218	239	260	281	302	323	344	366	4 8.8 8.4						
206		387	408	429	450	471	492	513	534	555	576	5 11.0 10.5						
207		597	618	639	660	681	702	723	744	765	785	6 13.2 12.6						
208		806	827	848	869	890	911	931	952	973	994	7 15.4 14.7						
209	32	015	035	056	077	098	118	139	160	181	201	8 17.6 16.8						
210		222	243	263	284	305	325	346	366	387	408	9 19.8 18.9						
211		428	449	469	490	510	531	552	572	593	613	20						
212		634	654	675	695	715	736	756	777	797	818	1 2.0						
213		838	858	879	899	919	940	960	980	1001	1021	2 4.0						
214	33	041	062	082	102	122	143	163	183	203	224	3 6.0						
215		244	264	284	304	325	345	365	385	405	425	4 8.0						
216		445	465	486	506	526	546	566	586	606	626	5 10.0						
217		646	666	686	706	726	746	766	786	806	826	6 12.0						
218		846	866	885	905	925	945	965	985	1005	1025	7 14.0						
219	34	044	064	084	104	124	143	163	183	203	223	8 16.0						
220		242	262	282	301	321	341	361	380	400	420	9 18.0						
221		439	459	479	498	518	537	557	577	596	616	19						
222		635	655	674	694	713	733	753	772	792	811	1 1.9						
223		830	850	869	889	908	928	947	967	986	1006	2 3.8						
224	35	025	044	064	083	102	122	141	160	180	199	3 5.7						
225		218	238	257	276	295	315	334	353	372	392	4 7.6						
226		411	430	449	468	488	507	526	545	564	583	5 9.5						
227		603	622	641	660	679	698	717	736	755	774	6 11.4						
228		793	813	832	851	870	889	908	927	946	965	7 13.3						
229		984	1003	1021	1040	1059	1078	1097	1116	1135	1154	8 15.2						
230	36	173	192	211	229	248	267	286	305	324	342	9 17.1						
231		361	380	399	418	436	455	474	493	511	530	18						
232		549	568	586	605	624	642	661	680	698	717	1 1.8						
233		736	754	773	791	810	829	847	866	884	903	2 3.6						
234		922	940	959	977	996	1014	1033	1051	1070	1088	3 5.4						
235	37	107	125	144	162	181	199	218	236	254	273	4 7.2						
236		291	310	328	346	365	383	401	420	438	457	5 9.0						
237		475	493	511	530	548	566	585	603	621	639	6 10.8						
238		658	676	694	712	731	749	767	785	803	822	7 12.6						
239		840	858	876	894	912	931	949	967	985	1003	8 14.4						
240	38	021	039	057	075	093	112	130	148	166	184	9 16.2						
241		202	220	238	256	274	292	310	328	346	364	17						
242		382	399	417	435	453	471	489	507	525	543	1 1.7						
243		561	578	596	614	632	650	668	686	703	721	2 3.4						
244		739	757	775	792	810	828	846	863	881	899	3 5.1						
245		917	934	952	970	987	1005	1023	1041	1058	1076	4 6.8						
246	39	094	111	129	146	164	182	199	217	235	252	5 8.5						
247		270	287	305	322	340	358	375	393	410	428	6 10.2						
248		445	463	480	498	515	533	550	568	585	602	7 11.9						
249		620	637	655	672	690	707	724	742	759	777	8 13.6						
250		794	811	829	846	863	881	898	915	933	950	9 15.3						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.						
0° 33' = 1980"	S.	4.	68	557	T.	4.	68	559	0° 38' = 2280"	S.	4.	68	557	T.	4.	68	559	
0 34 = 2040			4.	68	557		4.	68	559	0 39 = 2340		4.	68	557		4.	68	559
0 35 = 2100			4.	68	557		4.	68	559	0 40 = 2400		4.	68	557		4.	68	559
0 36 = 2160			4.	68	557		4.	68	559	0 41 = 2460		4.	68	556		4.	68	560
0 37 = 2220			4.	68	557		4.	68	559	0 42 = 2520		4.	68	556		4.	68	560

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
250	39	794	811	829	846	863	881	898	915	933	950						
251		967	985	*002	*019	*037	*054	*071	*088	*106	*123	18					
252	40	140	157	175	192	209	226	243	261	278	295	1	1.8				
253		312	329	346	364	381	398	415	432	449	466	2	3.6				
												3	5.4				
254		483	500	518	535	552	569	586	603	620	637	4	7.2				
255		654	671	688	705	722	739	756	773	790	807	5	9.0				
256		824	841	858	875	892	909	926	943	960	976	6	10.8				
												7	12.6				
257		993	*010	*027	*044	*061	*078	*095	*111	*128	*145	8	14.4				
258	41	162	179	196	212	229	246	263	280	296	313	9	16.2				
259		330	347	363	380	397	414	430	447	464	481						
260		497	514	531	547	564	581	597	614	631	647						
261		664	681	697	714	731	747	764	780	797	814	17					
262		830	847	863	880	896	913	929	946	963	979	1	1.7				
263		996	*012	*029	*046	*062	*078	*095	*111	*127	*144	2	3.4				
												3	5.1				
264	42	160	177	193	210	226	243	259	275	292	308	4	6.8				
265		325	341	357	374	390	406	423	439	455	472	5	8.5				
266		488	504	521	537	553	570	586	602	619	635	6	10.2				
												7	11.9				
267		651	667	684	700	716	732	749	765	781	797	8	13.6				
268		813	830	846	862	878	894	911	927	943	959	9	15.3				
269		975	991	*008	*024	*040	*056	*072	*088	*104	*120						
270	43	136	152	169	185	201	217	233	249	265	281						
271		297	313	329	345	361	377	393	409	425	441	16					
272		457	473	489	505	521	537	553	569	584	600	1	1.6				
273		616	632	648	664	680	696	712	727	743	759	2	3.2				
												3	4.8				
274		775	791	807	823	838	854	870	886	902	917	4	6.4				
275		933	949	965	981	996	*012	*028	*044	*059	*075	5	8.0				
276	44	091	107	122	138	154	170	185	201	217	232	6	9.6				
												7	11.2				
277		248	264	279	295	311	326	342	358	373	389	8	12.8				
278		404	420	436	451	467	483	498	514	529	545	9	14.4				
279		560	576	592	607	623	638	654	669	685	700						
280		716	731	747	762	778	793	809	824	840	855						
281		871	886	902	917	932	948	963	979	994	*010	15					
282	45	025	040	056	071	086	102	117	133	148	163	1	1.5				
283		179	194	209	225	240	255	271	286	301	317	2	3.0				
												3	4.5				
284		332	347	362	378	393	408	423	439	454	469	4	6.0				
285		484	500	515	530	545	561	576	591	606	621	5	7.5				
286		637	652	667	682	697	712	728	743	758	773	6	9.0				
												7	10.5				
287		788	803	818	834	849	864	879	894	909	924	8	12.0				
288		939	954	969	984	*000	*015	*030	*045	*060	*075	9	13.5				
289	46	090	105	120	135	150	165	180	195	210	225						
290		240	255	270	285	300	315	330	345	359	374						
291		389	404	419	434	449	464	479	494	509	523	14					
292		538	553	568	583	598	613	627	642	657	672	1	1.4				
293		687	702	716	731	746	761	776	790	805	820	2	2.8				
												3	4.2				
294		835	850	864	879	894	909	923	938	953	967	4	5.6				
295		982	997	*012	*026	*041	*056	*070	*085	*100	*114	5	7.0				
296	47	129	144	159	173	188	202	217	232	246	261	6	8.4				
												7	9.8				
297		276	290	305	319	334	349	363	378	392	407	8	11.2				
298		422	436	451	465	480	494	509	524	538	553	9	12.6				
299		567	582	596	611	625	640	654	669	683	698						
300		712	727	741	756	770	784	799	813	828	842						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
0° 41' = 2460"	S.	4.	68	556	T.	4.	68	560	0° 46' = 2760"	S.	4.	68	556	T.	4.	68	560
0 42 = 2520									0 47 = 2820								
0 43 = 2580									0 48 = 2880								
0 44 = 2640									0 49 = 2940								
0 45 = 2700									0 50 = 3000								

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.
300	47	712	727	741	756	770	784	799	813	828	842	
301		857	871	885	900	914	929	943	958	972	986	
302	48	001	015	029	044	058	073	087	101	116	130	
303		144	159	173	187	202	216	230	244	259	273	
304		287	302	316	330	344	359	373	387	401	416	15
305		430	444	458	473	487	501	515	530	544	558	1 1.5
306		572	586	601	615	629	643	657	671	686	700	2 3.0
307		714	728	742	756	770	785	799	813	827	841	3 4.5
308		855	869	883	897	911	926	940	954	968	982	4 6.0
309		996	*010	*024	*038	*052	*066	*080	*094	*108	*122	5 7.5
310	49	136	150	164	178	192	206	220	234	248	262	6 9.0
311		276	290	304	318	332	346	360	374	388	402	7 10.5
312		415	429	443	457	471	485	499	513	527	541	8 12.0
313		554	568	582	596	610	624	638	651	665	679	9 13.5
314		693	707	721	734	748	762	776	790	803	817	
315		831	845	859	872	886	900	914	927	941	955	14
316		969	982	996	*010	*024	*037	*051	*065	*079	*092	1 1.4
317	50	106	120	133	147	161	174	188	202	215	229	1 2.8
318		243	256	270	284	297	311	325	338	352	365	3 4.2
319		379	393	406	420	433	447	461	474	488	501	4 5.6
320		515	529	542	556	569	583	596	610	623	637	5 7.0
321		651	664	678	691	705	718	732	745	759	772	6 8.4
322		786	799	813	826	840	853	866	880	893	907	7 9.8
323		920	934	947	961	974	987	*001	*014	*028	*041	8 11.2
324	51	055	068	081	095	108	121	135	148	162	175	9 12.6
325		188	202	215	228	242	255	268	282	295	308	
326		322	335	348	362	375	388	402	415	428	441	
327		455	468	481	495	508	521	534	548	561	574	13
328		587	601	614	627	640	654	667	680	693	706	1 1.3
329		720	733	746	759	772	786	799	812	825	838	2 2.6
330		851	865	878	891	904	917	930	943	957	970	3 3.9
331		983	996	*009	*022	*035	*048	*061	*075	*088	*101	4 5.2
332	52	114	127	140	153	166	179	192	205	218	231	5 6.5
333		244	257	270	284	297	310	323	336	349	362	6 7.8
334		375	388	401	414	427	440	453	466	479	492	7 9.1
335		504	517	530	543	556	569	582	595	608	621	8 10.4
336		634	647	660	673	686	699	711	724	737	750	9 11.7
337		763	776	789	802	815	827	840	853	866	879	
338		892	905	917	930	943	956	969	982	994	*007	
339	53	020	033	046	058	071	084	097	110	122	135	12
340		148	161	173	186	199	212	224	237	250	263	1 1.2
341		275	288	301	314	326	339	352	364	377	390	2 2.4
342		403	415	428	441	453	466	479	491	504	517	3 3.6
343		529	542	555	567	580	593	605	618	631	643	4 4.8
344		656	668	681	694	706	719	732	744	757	769	5 6.0
345		782	794	807	820	832	845	857	870	882	895	6 7.2
346		908	920	933	945	958	970	983	995	*008	*020	7 8.4
347	54	033	045	058	070	083	095	108	120	133	145	8 9.6
348		158	170	183	195	208	220	233	245	258	270	9 10.8
349		283	295	307	320	332	345	357	370	382	394	
350		407	419	432	444	456	469	481	494	506	518	
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.
0° 50' = 3000"	S.	4. 68	556	T. 4. 68	561	0° 55' = 3300"	S. 4. 68	556	T. 4. 68	561		
0 51 = 3090	4. 68	556	4. 68	561	0 56 = 3360	4. 68	556	4. 68	561			
0 52 = 3120	4. 68	556	4. 68	561	0 57 = 3420	4. 68	555	4. 68	561			
0 53 = 3180	4. 68	556	4. 68	561	0 58 = 3480	4. 68	555	4. 68	562			
0 54 = 3240	4. 68	556	4. 68	561	0 59 = 3540	4. 68	555	4. 68	562			

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.
<b>350</b>	54	407	419	432	444	456	469	481	494	506	518	
351		531	543	555	568	580	593	605	617	630	642	
352		654	667	679	691	704	716	728	741	753	765	
353		777	790	802	814	827	839	851	864	876	888	
354		900	913	925	937	949	962	974	986	998	011	<b>13</b>
355	55	023	035	047	060	072	084	096	108	121	133	1 1,3
356		145	157	169	182	194	206	218	230	242	255	2 2,6
357		267	279	291	303	315	328	340	352	364	376	3 3,9
358		388	400	413	425	437	449	461	473	485	497	4 5,2
359		509	522	534	546	558	570	582	594	606	618	5 6,5
<b>360</b>		630	642	654	666	678	691	703	715	727	739	6 7,8
361		751	763	775	787	799	811	823	835	847	859	7 9,1
362		871	883	895	907	919	931	943	955	967	979	8 10,4
363		991	003	015	027	038	050	062	074	086	098	9 11,7
364	56	110	122	134	146	158	170	182	194	205	217	
365		229	241	253	265	277	289	301	312	324	336	<b>12</b>
366		348	360	372	384	396	407	419	431	443	455	1 1,2
367		467	478	490	502	514	526	538	549	561	573	2 2,4
368		585	597	608	620	632	644	656	667	679	691	3 3,6
369		703	714	726	738	750	761	773	785	797	808	4 4,8
<b>370</b>		820	832	844	855	867	879	891	902	914	926	5 6,0
371		937	949	961	972	984	996	008	019	031	043	6 7,2
372	57	054	066	078	089	101	113	124	136	148	159	7 8,4
373		171	183	194	206	217	229	241	252	264	276	8 9,6
374		287	299	310	322	334	345	357	368	380	392	9 10,8
375		403	415	426	438	449	461	473	484	496	507	
376		519	530	542	553	565	576	588	600	611	623	<b>11</b>
377		634	646	657	669	680	692	703	715	726	738	1 1,1
378		749	761	772	784	795	807	818	830	841	852	2 2,2
379		864	875	887	898	910	921	933	944	955	967	3 3,3
<b>380</b>		978	990	001	013	024	035	047	058	070	081	4 4,4
381	58	092	104	115	127	138	149	161	172	184	195	5 5,5
382		206	218	229	240	252	263	274	286	297	309	6 6,6
383		320	331	343	354	365	377	388	399	410	422	7 7,7
384		433	444	456	467	478	490	501	512	524	535	8 8,8
385		546	557	569	580	591	602	614	625	636	647	9 9,9
386		659	670	681	692	704	715	726	737	749	760	
387		771	782	794	805	816	827	838	850	861	872	<b>10</b>
388		883	894	906	917	928	939	950	961	973	984	1 1,0
389		995	006	017	028	040	051	062	073	084	095	2 2,0
<b>390</b>	59	106	118	129	140	151	162	173	184	195	207	3 3,0
391		218	229	240	251	262	273	284	295	306	318	4 4,0
392		329	340	351	362	373	384	395	406	417	428	5 5,0
393		439	450	461	472	483	494	506	517	528	539	6 6,0
394		550	561	572	583	594	605	616	627	638	649	7 7,0
395		660	671	682	693	704	715	726	737	748	759	8 8,0
396		770	780	791	802	813	824	835	846	857	868	9 9,0
397		879	890	901	912	923	934	945	956	966	977	
398		988	999	010	021	032	043	054	065	076	086	
399	60	097	108	119	130	141	152	163	173	184	195	
<b>400</b>		206	217	228	239	249	260	271	282	293	304	
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.
0° 58' = 3480"	S.	4. 68	555				1° 3' = 3780"	S.	4. 68	555		T. 4. 68 562
0 59 = 3540		4. 68	555				1 4 = 3840		4. 68	555		4. 68 563
1 0 = 3600		4. 68	555				1 5 = 3900		4. 68	555		4. 68 563
1 1 = 3660		4. 68	555				1 6 = 3960		4. 68	555		4. 68 563
1 2 = 3720		4. 68	555				1 7 = 4020		4. 68	555		4. 68 563

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.
400	60	206	217	228	239	249	260	271	282	293	304	
401		314	325	336	347	358	369	379	390	401	412	
402		423	433	444	455	466	477	487	498	509	520	
403		531	541	552	563	574	584	595	606	617	627	
404		638	649	660	670	681	692	703	713	724	735	
405		746	756	767	778	788	799	810	821	831	842	
406		853	863	874	885	895	906	917	927	938	949	
407		959	970	981	991	1002	1013	1023	1034	1045	1055	11
408	61	066	077	087	098	109	119	130	140	151	162	1 1.1
409		172	183	194	204	215	225	236	247	257	268	2 2.2
410		278	289	300	310	321	331	342	352	363	374	3 3.3
411		384	395	405	416	426	437	448	458	469	479	4 4.4
412		490	500	511	521	532	542	553	563	574	584	5 5.5
413		595	606	616	627	637	648	658	669	679	690	6 6.6
414		700	711	721	731	742	752	763	773	784	794	7 7.7
415		805	815	826	836	847	857	868	878	888	899	8 8.8
416		909	920	930	941	951	962	972	982	993	1003	9 9.9
417	62	014	024	034	045	055	066	076	086	097	107	
418		118	128	138	149	159	170	180	190	201	211	
419		221	232	242	252	263	273	284	294	304	315	
420		325	335	346	356	366	377	387	397	408	418	10
421		428	439	449	459	469	480	490	500	511	521	1 1.0
422		531	542	552	562	572	583	593	603	613	624	2 2.0
423		634	644	655	665	675	685	696	706	716	726	3 3.0
424		737	747	757	767	778	788	798	808	818	829	4 4.0
425		839	849	859	870	880	890	900	910	921	931	5 5.0
426		941	951	961	972	982	992	1002	1012	1022	1033	6 6.0
427	63	043	053	063	073	083	094	104	114	124	134	7 7.0
428		144	155	165	175	185	195	205	215	225	236	8 8.0
429		246	256	266	276	286	296	306	317	327	337	9 9.0
430		347	357	367	377	387	397	407	417	428	438	
431		448	458	468	478	488	498	508	518	528	538	
432		548	558	568	579	589	599	609	619	629	639	
433		649	659	669	679	689	699	709	719	729	739	
434		749	759	769	779	789	799	809	819	829	839	
435		849	859	869	879	889	899	909	919	929	939	
436		949	959	969	979	988	998	1008	1018	1028	1038	9
437	64	048	058	068	078	088	098	108	118	128	137	1 0.9
438		147	157	167	177	187	197	207	217	227	237	2 1.8
439		246	256	266	276	286	296	306	316	326	335	3 2.7
440		345	355	365	375	385	395	404	414	424	434	4 3.6
441		444	454	464	473	483	493	503	513	523	532	5 4.5
442		542	552	562	572	582	591	601	611	621	631	6 5.4
443		640	650	660	670	680	689	699	709	719	729	7 6.3
444		738	748	758	768	777	787	797	807	816	826	8 7.2
445		836	846	856	865	875	885	895	904	914	924	9 8.1
446		933	943	953	963	972	982	992	1002	1011	1021	
447	65	031	040	050	060	070	079	089	099	108	118	
448		128	137	147	157	167	176	186	196	205	215	
449		225	234	244	254	263	273	283	292	302	312	
450		321	331	341	350	360	369	379	389	398	408	
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.
1°	6'	= 3960"	8. 4. 68 555	T. 4. 68 563	1°	11'	= 4260"	8. 4. 68 554	T. 4. 68 564			
1	7	= 4020	4. 68 556	4. 68 563	1	12	= 4320	4. 68 554	4. 68 564			
1	8	= 4080	4. 68 556	4. 68 563	1	13	= 4380	4. 68 554	4. 68 564			
1	9	= 4140	4. 68 555	4. 68 563	1	14	= 4440	4. 68 554	4. 68 564			
1	10	= 4200	4. 68 554	4. 68 563	1	15	= 4500	4. 68 554	4. 68 564			

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.
450	65	321	331	341	350	360	369	379	389	398	408	
451		418	427	437	447	456	466	475	485	495	504	
452		514	523	533	543	552	562	571	581	591	600	
453		610	619	629	639	648	658	667	677	686	696	
454		706	715	725	734	744	753	763	772	782	792	
455		801	811	820	830	839	849	858	868	877	887	
456		896	906	916	925	935	944	954	963	973	982	
457		992	.001	.011	.020	.030	.039	.049	.058	.068	.077	10
458	66	087	096	106	115	124	134	143	153	162	172	1 1.0
459		181	191	200	210	219	229	238	247	257	266	2 2.0
460		276	285	295	304	314	323	332	342	351	361	3 3.0
461		370	380	389	398	408	417	427	436	445	455	4 4.0
462		464	474	483	492	502	511	521	530	539	549	5 5.0
463		558	567	577	586	596	605	614	624	633	642	6 6.0
464		652	661	671	680	689	699	708	717	727	736	7 7.0
465		745	755	764	773	783	792	801	811	820	829	8 8.0
466		839	848	857	867	876	885	894	904	913	922	9 9.0
467		932	941	950	960	969	978	987	997	.006	.015	
468	67	025	034	043	052	062	071	080	089	099	108	
469		117	127	136	145	154	164	173	182	191	201	
470		210	219	228	237	247	256	265	274	284	293	
471		302	311	321	330	339	348	357	367	376	385	9
472		394	403	413	422	431	440	449	459	468	477	1 0.9
473		486	495	504	514	523	532	541	550	560	569	2 1.8
474		578	587	596	605	614	624	633	642	651	660	3 2.7
475		669	679	688	697	706	715	724	733	742	752	4 3.6
476		761	770	779	788	797	806	815	825	834	843	5 4.5
477		852	861	870	879	888	897	906	916	925	934	6 5.4
478		943	952	961	970	979	988	997	.006	.015	.024	7 6.3
479	68	034	043	052	061	070	079	088	097	106	115	8 7.2
480		124	133	142	151	160	169	178	187	196	205	9 8.1
481		215	224	233	242	251	260	269	278	287	296	
482		305	314	323	332	341	350	359	368	377	386	
483		396	404	413	422	431	440	449	458	467	476	
484		485	494	502	511	520	529	538	547	556	565	
485		574	583	592	601	610	619	628	637	646	655	
486		664	673	681	690	699	708	717	726	735	744	
487		753	762	771	780	789	797	806	815	824	833	8
488		842	851	860	869	878	886	895	904	913	922	1 0.8
489		931	940	949	958	966	975	984	993	.002	.011	2 1.6
490	69	020	028	037	046	055	064	073	082	090	099	3 2.4
491		108	117	126	135	144	152	161	170	179	188	4 3.2
492		197	205	214	223	232	241	249	258	267	276	5 4.0
493		285	294	302	311	320	329	338	346	355	364	6 4.8
494		373	381	390	399	408	417	425	434	443	452	7 5.6
495		461	469	478	487	496	504	513	522	531	539	8 6.4
496		548	557	566	574	583	592	601	609	618	627	9 7.2
497		636	644	653	662	671	679	688	697	705	714	
498		723	732	740	749	758	767	775	784	793	801	
499		810	819	827	836	845	854	862	871	880	888	
500		897	906	914	923	932	940	949	958	966	975	
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.
1° 15' = 4500"	S.	4. 68	554	T. 4. 68	564		1° 20' = 4800"	S.	4. 68	554	T. 4. 68	565
1 16 = 4560	4. 68	554	4. 68	565			1 21 = 4860	4. 68	553	4. 68	566	
1 17 = 4620	4. 68	554	4. 68	565			1 22 = 4920	4. 68	553	4. 68	566	
1 18 = 4680	4. 68	554	4. 68	565			1 23 = 4980	4. 68	553	4. 68	566	
1 19 = 4740	4. 68	554	4. 68	565			1 24 = 5040	4. 68	553	4. 68	566	



TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.									
500	69	897	906	914	923	932	940	949	958	966	975										
501		984	992	.001	.010	.018	.027	.036	.044	.053	.062										
502	70	070	079	088	096	105	114	122	131	140	148										
503		157	165	174	183	191	200	209	217	226	234										
504		243	252	260	269	278	286	295	303	312	321										
505		329	338	346	355	364	372	381	389	398	406										
506		415	424	432	441	449	458	467	475	484	492										
507		501	509	518	526	535	544	552	561	569	578	9									
508		586	595	603	612	621	629	638	646	655	663	1 0.9									
509		672	680	689	697	706	714	723	731	740	749	2 1.8									
510		757	766	774	783	791	800	808	817	825	834	3 2.7									
511		842	851	859	868	876	885	893	902	910	919	4 3.6									
512		927	935	944	952	961	969	978	986	995	.003	5 4.5									
513	71	012	020	029	037	046	054	063	071	079	088	6 5.4									
514		096	105	113	122	130	139	147	155	164	172	7 6.3									
515		181	189	198	206	214	223	231	240	248	257	8 7.2									
516		265	273	282	290	299	307	315	324	332	341	9 8.1									
517		349	357	366	374	383	391	399	408	416	425										
518		433	441	450	458	466	475	483	492	500	508										
519		517	525	533	542	550	559	567	575	584	592										
520		600	609	617	625	634	642	650	659	667	675	8									
521		684	692	700	709	717	725	734	742	750	759	1 0.8									
522		767	775	784	792	800	809	817	825	834	842	2 1.6									
523		850	858	867	875	883	892	900	908	917	925	3 2.4									
524		933	941	950	958	966	975	983	991	999	.008	4 3.2									
525	72	016	024	032	041	049	057	066	074	082	090	5 4.0									
526		099	107	115	123	132	140	148	156	165	173	6 4.8									
527		181	189	198	206	214	222	230	239	247	255	7 5.6									
528		263	272	280	288	296	304	313	321	329	337	8 6.4									
529		346	354	362	370	378	387	395	403	411	419	9 7.2									
530		428	436	444	452	460	469	477	485	493	501										
531		509	518	526	534	542	550	558	567	575	583										
532		591	599	607	616	624	632	640	648	656	665										
533		673	681	689	697	705	713	722	730	738	746										
534		754	762	770	779	787	795	803	811	819	827										
535		835	843	852	860	868	876	884	892	900	908										
536		916	925	933	941	949	957	965	973	981	989	7									
537		997	.006	.014	.022	.030	.038	.046	.054	.062	.070	1 0.7									
538	73	078	086	094	102	111	119	127	135	143	151	2 1.4									
539		159	167	175	183	191	199	207	215	223	231	3 2.1									
540		239	247	255	263	272	280	288	296	304	312	4 2.8									
541		320	328	336	344	352	360	368	376	384	392	5 3.5									
542		400	408	416	424	432	440	448	456	464	472	6 4.2									
543		480	488	496	504	512	520	528	536	544	552	7 4.9									
544		560	568	576	584	592	600	608	616	624	632	8 5.6									
545		640	648	656	664	672	679	687	695	703	711	9 6.3									
546		719	727	735	743	751	759	767	775	783	791										
547		799	807	815	823	830	838	846	854	862	870										
548		878	886	894	902	910	918	926	933	941	949										
549		957	965	973	981	989	997	.005	.013	.020	.028										
550	74	036	044	052	060	068	076	084	092	099	107										
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.									
1° 23' = 4980"	S.	4.	68	553	T.	4.	68	566	1° 28' = 5280"	S.	4.	68	553	T.	4.	68	567				
1 24 = 5040			4.	68	553			4.	68	566			4.	68	553		4.	68	567		
1 25 = 5100			4.	68	553			4.	68	566			1 30 = 5400		4.	68	553		4.	68	567
1 26 = 5160			4.	68	553			4.	68	567			1 31 = 5460		4.	68	552		4.	68	568
1 27 = 5220			4.	68	553			4.	68	567			1 32 = 5520		4.	68	552		4.	68	568

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.						
550	74	036	044	052	060	068	076	084	092	099	107							
551		115	123	131	139	147	155	162	170	178	186							
552		194	202	210	218	225	233	241	249	257	265							
553		273	280	288	296	304	312	320	327	335	343							
554		351	359	367	374	382	390	398	406	414	421							
555		429	437	445	453	461	468	476	484	492	500							
556		507	515	523	531	539	547	554	562	570	578							
557		586	593	601	609	617	624	632	640	648	656							
558		663	671	679	687	695	702	710	718	726	733							
559		741	749	757	764	772	780	788	796	803	811							
560		819	827	834	842	850	858	865	873	881	889							
561		896	904	912	920	927	935	943	950	958	966	8						
562		974	981	989	997	*005	*012	*020	*028	*035	*043							
563	75	051	059	066	074	082	089	097	105	113	120	1 0,8						
564		128	136	143	151	159	166	174	182	189	197	2 1,6						
565		205	213	220	228	236	243	251	259	266	274	3 2,4						
566		282	289	297	305	312	320	328	335	343	351	4 3,2						
567		358	366	374	381	389	397	404	412	420	427	5 4,8						
568		435	442	450	458	465	473	481	488	496	504	6 5,6						
569		511	519	526	534	542	549	557	565	572	580	7 6,4						
570		587	595	603	610	618	626	633	641	648	656	8 7,2						
571		664	671	679	686	694	702	709	717	724	732							
572		740	747	755	762	770	778	785	793	800	808							
573		815	823	831	838	846	853	861	868	876	884							
574		891	899	906	914	921	929	937	944	952	959							
575		967	974	982	989	997	*005	*012	*020	*027	*035							
576	76	042	050	057	065	072	080	087	095	103	110							
577		118	125	133	140	148	155	163	170	178	185							
578		193	200	208	215	223	230	238	245	253	260							
579		268	275	283	290	298	305	313	320	328	335							
580		343	350	358	365	373	380	388	395	403	410							
581		418	425	433	440	448	455	462	470	477	485	7						
582		492	500	507	515	522	530	537	545	552	559							
583		567	574	582	589	597	604	612	619	626	634	1 0,7						
584		641	649	656	664	671	678	686	693	701	708	2 1,4						
585		716	723	730	738	745	753	760	768	775	782	3 2,1						
586		790	797	805	812	819	827	834	842	849	856	4 2,8						
587		864	871	879	886	893	901	908	916	923	930	5 3,5						
588		938	945	953	960	967	975	982	989	997	*004	6 4,2						
589	77	012	019	026	034	041	048	056	063	070	078	7 4,9						
590		085	093	100	107	115	122	129	137	144	151	8 5,6						
591		159	166	173	181	188	195	203	210	217	225							
592		232	240	247	254	262	269	276	283	291	298							
593		305	313	320	327	335	342	349	357	364	371							
594		379	386	393	401	408	415	422	430	437	444							
595		452	459	466	474	481	488	495	503	510	517							
596		525	532	539	546	554	561	568	576	583	590							
597		597	605	612	619	627	634	641	648	656	663							
598		670	677	685	692	699	706	714	721	728	735							
599		743	750	757	764	772	779	786	793	801	808							
600		815	822	830	837	844	851	859	866	873	880							
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.						
1° 31' = 5460"	S.	4.	68	552	T.	4.	68	568	1° 36' = 5760"	S.	4.	68	552	T.	4.	68	569	
1 32 = 5520			4.	68	552		4.	68	568	1 37 = 5820		4.	68	552		4.	68	569
1 33 = 5580			4.	68	552		4.	68	568	1 38 = 5880		4.	68	552		4.	68	569
1 34 = 5640			4.	68	552		4.	68	568	1 39 = 5940		4.	68	551		4.	68	569
1 35 = 5700			4.	68	552		4.	68	569	1 40 = 6000		4.	68	551		4.	68	570

**TABLE 20.**—*Five-place logarithms of natural numbers*—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
600	77	815	822	830	837	844	851	859	866	873	880						
601		887	895	902	909	916	924	931	938	945	952						
602		960	967	974	981	988	996	003	010	017	025						
603	78	032	039	046	053	061	068	075	082	089	097						
604		104	111	118	125	132	140	147	154	161	168						
605		176	183	190	197	204	211	219	226	233	240						
606		247	254	262	269	276	283	290	297	305	312						
607		319	326	333	340	347	355	362	369	376	383						
608		390	398	405	412	419	426	433	440	447	455						
609		462	469	476	483	490	497	504	512	519	526						
610		533	540	547	554	561	569	576	583	590	597						
611		604	611	618	625	633	640	647	654	661	668						
612		675	682	689	696	704	711	718	725	732	739						
613		746	753	760	767	774	781	789	796	803	810						
614		817	824	831	838	845	852	859	866	873	880						
615		888	895	902	909	916	923	930	937	944	951						
616		958	965	972	979	986	993	000	007	014	021						
617	79	029	036	043	050	057	064	071	078	085	092						
618		099	106	113	120	127	134	141	148	155	162						
619		169	176	183	190	197	204	211	218	225	232						
620		239	246	253	260	267	274	281	288	295	302						
621		309	316	323	330	337	344	351	358	365	372						
622		379	386	393	400	407	414	421	428	435	442						
623		449	456	463	470	477	484	491	498	505	511						
624		518	525	532	539	546	553	560	567	574	581						
625		588	595	602	609	616	623	630	637	644	650						
626		657	664	671	678	685	692	699	706	713	720						
627		727	734	741	748	754	761	768	775	782	789						
628		796	803	810	817	824	831	837	844	851	858						
629		865	872	879	886	893	900	906	913	920	927						
630		934	941	948	955	962	969	975	982	989	996						
631	80	003	010	017	024	030	037	044	051	058	065						
632		072	079	085	092	099	106	113	120	127	134						
633		140	147	154	161	168	175	182	188	195	202						
634		209	216	223	229	236	243	250	257	264	271						
635		277	284	291	298	305	312	318	325	332	339						
636		346	353	359	366	373	380	387	393	400	407						
637		414	421	428	434	441	448	455	462	468	475						
638		482	489	496	502	509	516	523	530	536	543						
639		550	557	564	570	577	584	591	598	604	611						
640		618	625	632	638	645	652	659	665	672	679						
641		686	693	699	706	713	720	726	733	740	747						
642		754	760	767	774	781	787	794	801	808	814						
643		821	828	835	841	848	855	862	868	875	882						
644		889	895	902	909	916	922	929	936	943	949						
645		956	963	969	976	983	990	996	003	010	017						
646	81	023	030	037	043	050	057	064	070	077	084						
647		090	097	104	111	117	124	131	137	144	151						
648		158	164	171	178	184	191	198	204	211	218						
649		224	231	238	245	251	258	265	271	278	285						
650		291	298	305	311	318	325	331	338	345	351						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
1° 40' = 6000	S.	4.	68	551	T.	4.	68	570	1° 45' = 6300	S.	4.	68	551	T.	4.	68	571
1 41 = 6009		4.	68	551		4.	68	570	1 46 = 6300		4.	68	551		4.	68	571
1 42 = 6120		4.	68	551		4.	68	570	1 47 = 6420		4.	68	550		4.	68	572
1 43 = 6180		4.	68	551		4.	68	570	1 48 = 6480		4.	68	550		4.	68	572
1 44 = 6240		4.	68	551		4.	68	571	1 49 = 6540		4.	68	550		4.	68	572

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
650	81	291	298	305	311	318	325	331	338	345	351						
651		358	365	371	378	385	391	398	405	411	418						
652		425	431	438	445	451	458	465	471	478	485						
653		491	498	505	511	518	525	531	538	544	551						
654		558	564	571	578	584	591	598	604	611	617						
655		624	631	637	644	651	657	664	671	677	684						
656		690	697	704	710	717	723	730	737	743	750						
657		757	763	770	776	783	790	796	803	809	816						
658		823	829	836	842	849	856	862	869	875	882						
659		889	895	902	908	915	921	928	935	941	948						
660		954	961	968	974	981	987	994	1000	1007	1011						
661	82	020	027	033	040	046	053	060	066	073	079	7					
662		086	092	099	105	112	119	125	132	138	145	1					
663		151	158	164	171	178	184	191	197	204	210	2					
664		217	223	230	236	243	249	256	263	269	276	3					
665		282	289	295	302	308	315	321	328	334	341	4					
666		347	354	360	367	373	380	387	393	400	406	5					
667		413	419	426	432	439	445	452	458	465	471	6					
668		478	484	491	497	504	510	517	523	530	536	7					
669		543	549	556	562	569	575	582	588	595	601	8					
670		607	614	620	627	633	640	646	653	659	666	9					
671		672	679	685	692	698	705	711	718	724	730						
672		737	743	750	756	763	769	776	782	789	795						
673		802	808	814	821	827	834	840	847	853	860						
674		866	872	879	885	892	898	905	911	918	924						
675		930	937	943	950	956	963	969	975	982	988						
676		995	1001	1008	1014	1020	1027	1033	1040	1046	1052						
677	83	059	065	072	078	085	091	097	104	110	117						
678		123	129	136	142	149	155	161	168	174	181						
679		187	193	200	206	213	219	225	232	238	245						
680		251	257	264	270	276	283	289	296	302	308						
681		315	321	327	334	340	347	353	359	366	372						
682		378	385	391	398	404	410	417	423	429	436						
683		442	448	455	461	467	474	480	487	493	499						
684		506	512	518	525	531	537	544	550	556	563						
685		569	575	582	588	594	601	607	613	620	626						
686		632	639	645	651	658	664	670	677	683	689						
687		696	702	708	715	721	727	734	740	746	753						
688		759	765	771	778	784	790	797	803	809	816						
689		822	828	835	841	847	853	860	866	872	879						
690		885	891	897	904	910	916	923	929	935	942						
691		948	954	960	967	973	979	985	992	998	1004						
692	84	011	017	023	029	036	042	048	055	061	067						
693		073	080	086	092	098	105	111	117	123	130						
694		136	142	148	155	161	167	173	180	186	192						
695		198	205	211	217	223	230	236	242	248	255						
696		261	267	273	280	286	292	298	305	311	317						
697		323	330	336	342	348	354	361	367	373	379						
698		386	392	398	404	410	417	423	429	435	442						
699		448	454	460	466	473	479	485	491	497	504						
700		510	516	522	528	535	541	547	553	559	566						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
1° 48' = 6480"	S.	4.	68	550	T.	4.	68	572	1° 53' = 6780"	S.	4.	68	550	T.	4.	68	573
1 49 = 6540		4.	68	550		4.	68	572	1 54 = 6840		4.	68	550		4.	68	573
1 50 = 6600		4.	68	550		4.	68	572	1 55 = 6900		4.	68	549		4.	68	574
1 51 = 6660		4.	68	550		4.	68	573	1 56 = 6960		4.	68	549		4.	68	574
1 52 = 6720		4.	68	550		4.	68	573	1 57 = 7020		4.	68	549		4.	68	574

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
700	84	510	516	522	528	535	541	547	553	559	566						
701		572	578	584	590	597	603	609	615	621	628						
702		634	640	646	652	658	665	671	677	683	689						
703		696	702	708	714	720	726	733	739	745	751						
704		757	763	770	776	782	788	794	800	807	813						
705		819	825	831	837	844	850	856	862	868	874						
706		880	887	893	899	905	911	917	924	930	936						
707		942	948	954	960	967	973	979	985	991	997	7					
708	85	003	009	016	022	028	034	040	046	052	058	1 0,7					
709		065	071	077	083	089	095	101	107	114	120	2 1,4					
710		126	132	138	144	150	156	163	169	175	181	3 2,1					
711		187	193	199	205	211	217	224	230	236	242	4 2,8					
712		248	254	260	266	272	278	285	291	297	303	5 3,5					
713		309	315	321	327	333	339	345	352	358	364	6 4,2					
714		370	376	382	388	394	400	406	412	418	425	7 4,9					
715		431	437	443	449	455	461	467	473	479	485	8 5,6					
716		491	497	503	509	516	522	528	534	540	546	9 6,3					
717		552	558	564	570	576	582	588	594	600	606						
718		612	618	625	631	637	643	649	655	661	667						
719		673	679	685	691	697	703	709	715	721	727						
720		733	739	745	751	757	763	769	775	781	788						
721		794	800	806	812	818	824	830	836	842	848	6					
722		854	860	866	872	878	884	890	896	902	908	1 0,6					
723		914	920	926	932	938	944	950	956	962	968	2 1,2					
724		974	980	986	992	998	*004	*010	*016	*022	*028	3 1,8					
725	86	034	040	046	052	058	064	070	076	082	088	4 2,4					
726		094	100	106	112	118	124	130	136	141	147	5 3,0					
727		153	159	165	171	177	183	189	195	201	207	6 3,6					
728		213	219	225	231	237	243	249	255	261	267	7 4,2					
729		273	279	285	291	297	303	308	314	320	326	8 4,8					
730		332	338	344	350	356	362	368	374	380	386	9 5,4					
731		392	398	404	410	415	421	427	433	439	445						
732		451	457	463	469	475	481	487	493	499	504						
733		510	516	522	528	534	540	546	552	558	564						
734		570	576	581	587	593	599	605	611	617	623						
735		629	635	641	646	652	658	664	670	676	682						
736		688	694	700	705	711	717	723	729	735	741						
737		747	753	759	764	770	776	782	788	794	800						
738		806	812	817	823	829	835	841	847	853	859	1 0,5					
739		864	870	876	882	888	894	900	906	911	917	2 1,0					
740		923	929	935	941	947	953	958	964	970	976	3 1,5					
741		982	988	994	999	*005	*011	*017	*023	*029	*035	4 2,0					
742	87	040	046	052	058	064	070	075	081	087	093	5 2,5					
743		099	105	111	116	122	128	134	140	146	151	6 3,0					
744		157	163	169	175	181	186	192	198	204	210	7 3,5					
745		216	221	227	233	239	245	251	256	262	268	8 4,0					
746		274	280	286	291	297	303	309	315	320	326	9 4,5					
747		332	338	344	349	355	361	367	373	379	384						
748		390	396	402	408	413	419	425	431	437	442						
749		448	454	460	466	471	477	483	489	495	500						
750		506	512	518	523	529	535	541	547	552	558						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
1° 56' = 6960"	S.	4.	68	549	T.	4.	68	574	2° 1' = 7260"	S.	4.	68	549	T.	4.	68	575
1 57 = 7020			4.	68	549		4.	68	574		4.	68	548		4.	68	576
1 58 = 7080			4.	68	549		4.	68	575		4.	68	548		4.	68	576
1 59 = 7140			4.	68	549		4.	68	575		4.	68	548		4.	68	576
2 0 = 7200			4.	68	549		4.	68	575		4.	68	548		4.	68	577

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.	
750	87	506	512	518	523	529	535	541	547	552	558		
751		564	570	576	581	587	593	599	604	610	616		
752		622	628	633	639	645	651	656	662	668	674		
753		679	685	690	697	703	708	714	720	726	731		
754		737	743	749	754	760	766	772	777	783	789		
755		795	800	806	812	818	823	829	835	841	846		
756		852	858	864	869	875	881	887	892	898	904		
757		910	915	921	927	933	938	944	950	955	961		
758		967	973	978	984	990	996	001	007	013	018		
759	88	024	030	036	041	047	053	058	064	070	076		
760		081	087	093	098	104	110	116	121	127	133		
761		138	144	150	156	161	167	173	178	184	190	6	
762		195	201	207	213	218	224	230	235	241	247	1 0.6	
763		252	258	264	270	275	281	287	292	298	304	2 1.2	
764		309	315	321	326	332	338	343	349	355	360	3 1.8	
765		366	372	377	383	389	395	400	406	412	417	4 2.4	
766		423	429	434	440	446	451	457	463	468	474	5 3.0	
767		480	485	491	497	502	508	513	519	525	530	6 3.6	
768		536	542	547	553	559	564	570	576	581	587	7 4.2	
769		593	598	604	610	615	621	627	632	638	643	8 4.8	
770		649	655	660	666	672	677	683	689	694	700	9 5.4	
771		705	711	717	722	728	734	739	745	750	756		
772		762	767	773	779	784	790	795	801	807	812		
773		818	824	829	835	840	846	852	857	863	868		
774		874	880	885	891	897	902	908	913	919	925		
775		930	936	941	947	953	958	964	969	975	981		
776		986	992	997	003	009	014	020	025	031	037		
777	89	042	048	053	059	064	070	076	081	087	092		
778		098	104	109	115	120	126	131	137	143	148		
779		154	159	165	170	176	182	187	193	198	204		
780		209	215	221	226	232	237	243	248	254	260	5	
781		265	271	276	282	287	293	298	304	310	315	1 0.5	
782		321	326	332	337	343	348	354	360	365	371	2 1.0	
783		376	382	387	393	398	404	409	415	421	426	3 1.5	
784		432	437	443	448	454	459	465	470	476	481	4 2.0	
785		487	492	498	504	509	515	520	526	531	537	5 2.5	
786		542	548	553	559	564	570	575	581	586	592	6 3.0	
787		597	603	609	614	620	625	631	636	642	647	7 3.5	
788		653	658	664	669	675	680	686	691	697	702	8 4.0	
789		708	713	719	724	730	735	741	746	752	757	9 4.5	
790		763	768	774	779	785	790	796	801	807	812		
791		818	823	829	834	840	845	851	856	862	867		
792		873	878	883	889	894	900	905	911	916	922		
793		927	933	938	944	949	955	960	966	971	977		
794		982	988	993	998	004	009	015	020	026	031		
795	90	037	042	048	053	059	064	069	075	080	086		
796		091	097	102	108	113	119	124	129	135	140		
797		146	151	157	162	168	173	179	184	189	195		
798		200	206	211	217	222	227	233	238	244	249		
799		255	260	266	271	276	282	287	293	298	304		
800		309	314	320	325	331	336	342	347	352	358		
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.	
2° 5' = 7500"	S.	4.	68	548	T.	4.	68	577	2° 10' = 7800"	S.	4.	68	578
2 6 = 7560		4.	68	548		4.	68	577	2 11 = 7860		4.	68	579
2 7 = 7620		4.	68	548		4.	68	577	2 12 = 7920		4.	68	579
2 8 = 7680		4.	68	547		4.	68	578	2 13 = 7980		4.	68	579
2 9 = 7740		4.	68	547		4.	68	578	2 14 = 8040		4.	68	579

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
800	90	309	314	320	325	331	336	342	347	352	358						
801		363	369	374	380	385	390	396	401	407	412						
802		417	423	428	434	439	445	450	455	461	466						
803		472	477	482	488	493	499	504	509	515	520						
804		526	531	536	542	547	553	558	563	569	574						
805		580	585	590	596	601	607	612	617	623	628						
806		634	639	644	650	655	660	666	671	677	682						
807		687	693	698	703	709	714	720	725	730	736						
808		741	747	752	757	763	768	773	779	784	789						
809		795	800	806	811	816	822	827	832	838	843						
810		849	854	859	865	870	875	881	886	891	897						
811		902	907	913	918	924	929	934	940	945	950	6					
812		956	961	966	972	977	982	988	993	998	1004	1 0.6					
813	91	009	014	020	025	030	036	041	046	052	057	2 1.2					
814		062	068	073	078	084	089	094	100	105	110	3 1.8					
815		116	121	126	132	137	142	148	153	158	164	4 2.4					
816		169	174	180	185	190	196	201	206	212	217	5 3.0					
817		222	228	233	238	243	249	254	259	265	270	6 3.6					
818		275	281	286	291	297	302	307	312	318	323	7 4.2					
819		328	334	339	344	350	355	360	365	371	376	8 4.8					
820		381	387	392	397	403	408	413	418	424	429	9 5.4					
821		434	440	445	450	455	461	466	471	477	482						
822		487	492	498	503	508	514	519	524	529	535						
823		540	545	551	556	561	566	572	577	582	587						
824		593	598	603	609	614	619	624	630	635	640						
825		645	651	656	661	666	672	677	682	687	693						
826		698	703	709	714	719	724	730	735	740	745						
827		751	756	761	766	772	777	782	787	793	798						
828		803	808	814	819	824	829	834	840	845	850						
829		855	861	866	871	876	882	887	892	897	903						
830		908	913	918	924	929	934	939	944	950	955	5					
831		960	965	971	976	981	986	991	997	1002	1007	1 0.5					
832	92	012	018	023	028	033	038	044	049	054	059	2 1.0					
833		065	070	075	080	085	091	096	101	106	111	3 1.5					
834		117	122	127	132	137	143	148	153	158	163	4 2.0					
835		169	174	179	184	189	195	200	205	210	215	5 2.5					
836		221	226	231	236	241	247	252	257	262	267	6 3.0					
837		273	278	283	288	293	298	304	309	314	319	7 3.5					
838		324	330	335	340	345	350	355	361	366	371	8 4.0					
839		376	381	387	392	397	402	407	412	418	423	9 4.5					
840		428	433	438	443	449	454	459	464	469	474						
841		480	485	490	495	500	505	511	516	521	526						
842		531	536	542	547	552	557	562	567	572	578						
843		583	588	593	598	603	609	614	619	624	629						
844		634	639	645	650	655	660	665	670	675	681						
845		686	691	696	701	706	711	716	722	727	732						
846		737	742	747	752	758	763	768	773	778	783						
847		788	793	799	804	809	814	819	824	829	834						
848		840	845	850	855	860	865	870	875	881	886						
849		891	896	901	906	911	916	921	927	932	937						
850		942	947	952	957	962	967	973	978	983	988						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
2° 13' = 7980"	S.	4.	68	547	T.	4.	68	579	2° 18' = 8280"	S.	4.	68	546	T.	4.	68	581
2 14 = 8040		4.	68	546		4.	68	579	2 19 = 8340		4.	68	546		4.	68	581
2 15 = 8100		4.	68	546		4.	68	580	2 20 = 8400		4.	68	545		4.	68	582
2 16 = 8160		4.	68	546		4.	68	580	2 21 = 8460		4.	68	545		4.	68	582
2 17 = 8220		4.	68	546		4.	68	580	2 22 = 8520		4.	68	545		4.	68	582

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.						
850	92	942	947	952	957	962	967	973	978	983	988							
851		993	998	003	008	013	018	024	029	034	039							
852	93	044	049	054	059	064	069	075	080	085	090							
853		095	100	105	110	115	120	125	131	136	141							
854		146	151	156	161	166	171	176	181	186	192							
855		197	202	207	212	217	222	227	232	237	242							
856		247	252	258	263	268	273	278	283	288	293							
857		298	303	308	313	318	323	328	334	339	344	6						
858		349	354	359	364	369	374	379	384	389	394	1 0.6						
859		399	404	409	414	420	425	430	435	440	445	2 1.2						
860		450	455	460	465	470	475	480	485	490	495	3 1.8						
861		500	505	510	515	520	526	531	536	541	546	4 2.4						
862		551	556	561	566	571	576	581	586	591	596	5 3.0						
863		601	606	611	616	621	626	631	636	641	646	6 3.6						
864		651	656	661	666	671	676	682	687	692	697	7 4.2						
865		702	707	712	717	722	727	732	737	742	747	8 4.8						
866		752	757	762	767	772	777	782	787	792	797	9 5.4						
867		802	807	812	817	822	827	832	837	842	847							
868		852	857	862	867	872	877	882	887	892	897							
869		902	907	912	917	922	927	932	937	942	947							
870		952	957	962	967	972	977	982	987	992	997							
871	94	002	007	012	017	022	027	032	037	042	047	5						
872		052	057	062	067	072	077	082	086	091	096	1 0.5						
873		101	106	111	116	121	126	131	136	141	146	2 1.0						
874		151	156	161	166	171	176	181	186	191	196	3 1.5						
875		201	206	211	216	221	226	231	236	240	245	4 2.0						
876		250	255	260	265	270	275	280	285	290	295	5 2.5						
877		300	305	310	315	320	325	330	335	340	345	6 3.0						
878		349	354	359	364	369	374	379	384	389	394	7 3.5						
879		399	404	409	414	419	424	429	433	438	443	8 4.0						
880		448	453	458	463	468	473	478	483	488	493	9 4.5						
881		498	503	507	512	517	522	527	532	537	542							
882		547	552	557	562	567	571	576	581	586	591							
883		596	601	606	611	616	621	626	630	635	640							
884		645	650	655	660	665	670	675	680	685	689							
885		694	699	704	709	714	719	724	729	734	738							
886		743	748	753	758	763	768	773	778	783	787							
887		792	797	802	807	812	817	822	827	832	836	4						
888		841	846	851	856	861	866	871	876	880	885	1 0.4						
889		890	895	900	905	910	915	919	924	929	934	2 0.8						
890		939	944	949	954	959	963	968	973	978	983	3 1.2						
891		988	993	998	002	007	012	017	022	027	032	4 1.6						
892	95	036	041	046	051	056	061	066	071	075	080	5 2.0						
893		085	090	095	100	105	109	114	119	124	129	6 2.4						
894		134	139	143	148	153	158	163	168	173	177	7 2.8						
895		182	187	192	197	202	207	211	216	221	226	8 3.2						
896		231	236	240	245	250	255	260	265	270	274	9 3.6						
897		279	284	289	294	299	303	308	313	318	323							
898		328	332	337	342	347	352	357	361	366	371							
899		376	381	386	390	395	400	405	410	415	419							
900		424	429	434	439	444	448	453	458	463	468							
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.						
2° 21' = 8460"	S.	4.	68	545	T.	4.	68	582	2° 26' = 8760"	S.	4.	68	544	T.	4.	68	584	
2 22 = 8520			4.	68	545		4.	68	582	2 27 = 8820		4.	68	544		4.	68	584
2 23 = 8580			4.	68	545		4.	68	583	2 28 = 8880		4.	68	544		4.	68	584
2 24 = 8640			4.	68	545		4.	68	583	2 29 = 8940		4.	68	544		4.	68	585
2 25 = 8700			4.	68	545		4.	68	583	2 30 = 9000		4.	68	544		4.	68	585



TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.							
900	95	424	429	434	439	444	448	453	458	463	468								
901		472	477	482	487	492	497	501	506	511	516								
902		521	525	530	535	540	545	550	554	559	564								
903		569	574	578	583	588	593	598	602	607	612								
904		617	622	626	631	636	641	646	650	655	660								
905		665	670	674	679	684	689	694	698	703	708								
906		713	718	722	727	732	737	742	746	751	756								
907		761	766	770	775	780	785	789	794	799	804								
908		809	813	818	823	828	832	837	842	847	852								
909		856	861	866	871	875	880	885	890	895	899								
910		904	909	914	918	923	928	933	938	942	947								
911		952	957	961	966	971	976	980	985	990	995								
912		999	*004	*009	*014	*019	*023	*028	*033	*038	*042	5							
913	96	047	052	057	061	066	071	076	080	085	090	1 0.5							
914		095	099	104	109	114	118	123	128	133	137	2 1.0							
915		142	147	152	156	161	166	171	175	180	185	3 1.5							
916		190	194	199	204	209	213	218	223	227	232	4 2.0							
917		237	242	246	251	256	261	265	270	275	280	5 2.5							
918		284	289	294	298	303	308	313	317	322	327	6 3.0							
919		332	336	341	346	350	355	360	365	369	374	7 3.5							
920		379	384	388	393	398	402	407	412	417	421	8 4.0							
921		426	431	435	440	445	450	454	459	464	468	9 4.5							
922		473	478	483	487	492	497	501	506	511	515								
923		520	525	530	534	539	544	548	553	558	562								
924		567	572	577	581	586	591	595	600	605	609								
925		614	619	624	628	633	638	642	647	652	656								
926		661	666	670	675	680	685	689	694	699	703								
927		708	713	717	722	727	731	736	741	745	750								
928		755	759	764	769	774	778	783	788	792	797								
929		802	806	811	816	820	825	830	834	839	844								
930		848	853	858	862	867	872	876	881	886	890								
931		895	900	904	909	914	918	923	928	932	937								
932		942	946	951	956	960	965	970	974	979	984	4							
933		988	993	997	*002	*007	*011	*016	*021	*025	*030	1 0.4							
934	97	035	039	044	049	053	058	063	067	072	077	2 0.8							
935		081	086	090	095	100	104	109	114	118	123	3 1.2							
936		128	132	137	142	146	151	155	160	165	169	4 1.6							
937		174	179	183	188	192	197	202	206	211	216	5 2.0							
938		220	225	230	234	239	243	248	253	257	262	6 2.4							
939		267	271	276	280	285	290	294	299	304	308	7 2.8							
940		313	317	322	327	331	336	340	345	350	354	8 3.2							
941		359	364	368	373	377	382	387	391	396	400	9 3.6							
942		405	410	414	419	424	428	433	437	442	447								
943		451	456	460	465	470	474	479	483	488	493								
944		497	502	506	511	516	520	525	529	534	539								
945		543	548	552	557	562	566	571	575	580	585								
946		589	594	598	603	607	612	617	621	626	630								
947		635	640	644	649	653	658	663	667	672	676								
948		681	685	690	695	699	704	708	713	717	722								
949		727	731	736	740	745	749	754	759	763	768								
950		772	777	782	786	791	795	800	804	809	813								
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.							
2° 30' = 9000"	S.	4.	68	544	T.	4.	68	585	2° 35' = 9300"	S.	4.	68	543	T.	4.	68	587		
2 31 = 9060				4.	68	544		4.	68	585			4.	68	543		4.	68	587
2 32 = 9120				4.	68	543		4.	68	586			4.	68	542		4.	68	588
2 33 = 9180				4.	68	543		4.	68	586			4.	68	542		4.	68	588
2 34 = 9240				4.	68	543		4.	68	587			4.	68	542		4.	68	588

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.							
950	97	772	777	782	786	791	795	800	804	809	813								
951		818	823	827	832	836	841	845	850	855	859								
952		864	868	873	877	882	886	891	896	900	905								
953		909	914	918	923	928	932	937	941	946	950								
954		955	959	964	968	973	978	982	987	991	996								
955	98	000	005	009	014	019	023	028	032	037	041								
956		046	050	055	059	064	068	073	078	082	087								
957		091	096	100	105	109	114	118	123	127	132								
958		137	141	146	150	155	159	164	168	173	177								
959		182	186	191	195	200	204	209	214	218	223								
960		227	232	236	241	245	250	254	259	263	268								
961		272	277	281	286	290	295	299	304	308	313	5							
962		318	322	327	331	336	340	345	349	354	358	1 0.5							
963		363	367	372	376	381	385	390	394	399	403	2 1.0							
964		408	412	417	421	426	430	435	439	444	448	3 1.5							
965		453	457	462	466	471	475	480	484	489	493	4 2.0							
966		498	502	507	511	516	520	525	529	534	538	5 2.5							
967		543	547	552	556	561	565	570	574	579	583	6 3.0							
968		588	592	597	601	605	610	614	619	623	628	7 3.5							
969		632	637	641	646	650	655	659	664	668	673	8 4.0							
970		677	682	686	691	695	700	704	709	713	717	9 4.5							
971		722	726	731	735	740	744	749	753	758	762								
972		767	771	776	780	784	789	793	798	802	807								
973		811	816	820	825	829	834	838	843	847	851								
974		856	860	865	869	874	878	883	887	892	896								
975		900	905	909	914	918	923	927	932	936	941								
976		945	949	954	958	963	967	972	976	981	985								
977		989	994	998	*003	*007	*012	*016	*021	*025	*029								
978	99	034	038	043	047	052	056	061	065	069	074								
979		078	083	087	092	096	100	105	109	114	118								
980		123	127	131	136	140	145	149	154	158	162								
981		167	171	176	180	185	189	193	198	202	207	4							
982		211	216	220	224	229	233	238	242	247	251	1 0.4							
983		255	260	264	269	273	277	282	286	291	295	2 0.8							
984		300	304	308	313	317	322	326	330	335	339	3 1.2							
985		344	348	352	357	361	366	370	374	379	383	4 1.6							
986		388	392	396	401	405	410	414	419	423	427	5 2.0							
987		432	436	441	445	449	454	458	463	467	471	6 2.4							
988		476	480	484	489	493	498	502	506	511	515	7 2.8							
989		520	524	528	533	537	542	546	550	555	559	8 3.2							
990		564	568	572	577	581	585	590	594	599	603	9 3.6							
991		607	612	616	621	625	629	634	638	642	647								
992		651	656	660	664	669	673	677	682	686	691								
993		695	699	704	708	712	717	721	726	730	734								
994		739	743	747	752	756	760	765	769	774	778								
995		782	787	791	795	800	804	808	813	817	822								
996		826	830	835	839	843	848	852	856	861	865								
997		870	874	878	883	887	891	896	900	904	909								
998		913	917	922	926	930	935	939	944	948	952								
999		957	961	965	970	974	978	983	987	991	996								
1000	00	000	004	009	013	017	022	026	030	035	039								
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.							
2° 38' = 9480"	S.	4.	68	542	T.	4.	68	588	2° 43' = 9780"	S.	4.	68	541	T.	4.	68	590		
2 39 = 9540				4.	68	542		4.	68	588			4.	68	541		4.	68	590
2 40 = 9600				4.	68	542		4.	68	589			4.	68	541		4.	68	591
2 41 = 9660				4.	68	542		4.	68	589			4.	68	541		4.	68	591
2 42 = 9720				4.	68	541		4.	68	590			4.	68	540		4.	68	592

Formula for using quantities  $S$  and  $T$ :

$$\log \sin a = \log a'' + S.$$

$$\log \tan a = \log a'' + T.$$

$$\log \cot a = \text{a. c. log } a'' + \text{a. c. log } T.$$

$$\log a'' = \log \sin a - S = \log \tan a - T.$$

$$\log \cos a = \log (90^\circ - a)'' + S.$$

$$\log \cot a = \log (90^\circ - a)'' + T.$$

$$\log \tan a = \text{a. c. log } (90^\circ - a)'' + \text{a. c. log } T.$$

$$\log (90^\circ - a)'' = \log \cos a - S = \log \cot a - T.$$

TABLE 21.—Five-place logarithms of circular functions, expressed in arc and time.

0 <sup>h</sup>		0 <sup>o</sup>									
m.	s.	i	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.			
0	0	0	—		—		—	0.00 000	60	60	0
4	1		6.46 373	30103	6.46 373	30103	3.53 627	0.00 000	59		56
8	2		6.76 476	17609	6.76 476	17609	3.23 524	0.00 000	58		52
12	3		6.94 085	12494	6.94 085	12494	3.05 915	0.00 000	57		48
16	4		7.06 579	9691	7.06 579	9691	2.93 421	0.00 000	56		44
0	20	5	7.16 270		7.16 270		2.83 730	0.00 000	55	59	40
24	6		7.24 188	7918	7.24 188	7918	2.75 812	0.00 000	54		36
28	7		7.30 882	6694	7.30 882	6694	2.69 118	0.00 000	53		32
32	8		7.36 682	5800	7.36 682	5800	2.63 313	0.00 000	52		28
36	9		7.41 797	5115	7.41 797	5115	2.58 208	0.00 000	51		24
0	40	10	7.46 373		7.46 373		2.53 627	0.00 000	50	59	20
44	11		7.50 512	4139	7.50 512	4139	2.49 488	0.00 000	49		16
48	12		7.54 291	3779	7.54 291	3779	2.45 709	0.00 000	48		12
52	13		7.57 767	3476	7.57 767	3476	2.42 233	0.00 000	47		8
56	14		7.60 985	3218	7.60 985	3219	2.39 014	0.00 000	46		4
1	0	15	7.63 982		7.63 982		2.36 018	0.00 000	45	59	0
4	16		7.66 784	2802	7.66 785	2803	2.33 215	0.00 000	44		56
8	17		7.69 417	2633	7.69 418	2633	2.30 582	9.99 999	43		52
12	18		7.71 900	2483	7.71 900	2482	2.28 100	9.99 999	42		48
16	19		7.74 248	2348	7.74 248	2348	2.25 752	9.99 999	41		44
1	20	20	7.76 475		7.76 476		2.23 524	9.99 999	40	58	40
24	21		7.78 594	2119	7.78 595	2119	2.21 405	9.99 999	39		36
28	22		7.80 615	2021	7.80 615	2020	2.19 385	9.99 999	38		32
32	23		7.82 545	1930	7.82 546	1931	2.17 454	9.99 999	37		28
36	24		7.84 393	1848	7.84 394	1848	2.15 606	9.99 999	36		24
1	40	25	7.86 166		7.86 167		2.13 833	9.99 999	35	58	20
44	26		7.87 870	1704	7.87 871	1704	2.12 129	9.99 999	34		16
48	27		7.89 509	1639	7.89 510	1639	2.10 490	9.99 999	33		12
52	28		7.91 088	1579	7.91 089	1579	2.08 911	9.99 999	32		8
56	29		7.92 612	1524	7.92 613	1524	2.07 387	9.99 998	31		4
2	0	30	7.94 084		7.94 086		2.05 914	9.99 998	30	58	0
4	31		7.95 508	1424	7.95 510	1424	2.04 490	9.99 998	29		56
8	32		7.96 887	1379	7.96 889	1379	2.03 111	9.99 998	28		52
12	33		7.98 223	1336	7.98 225	1336	2.01 775	9.99 998	27		48
16	34		7.99 520	1297	7.99 522	1297	2.00 478	9.99 998	26		44
2	20	35	8.00 779		8.00 781		1.99 219	9.99 998	25	57	40
24	36		8.02 002	1223	8.02 004	1223	1.97 996	9.99 998	24		36
28	37		8.03 192	1190	8.03 194	1190	1.96 806	9.99 997	23		32
32	38		8.04 350	1158	8.04 353	1159	1.95 647	9.99 997	22		28
36	39		8.05 478	1128	8.05 481	1128	1.94 519	9.99 997	21		24
2	40	40	8.06 578		8.06 581		1.93 419	9.99 997	20	57	20
44	41		8.07 650	1072	8.07 653	1072	1.92 347	9.99 997	19		16
48	42		8.08 696	1046	8.08 700	1047	1.91 300	9.99 997	18		12
52	43		8.09 718	1022	8.09 722	1022	1.90 278	9.99 997	17		8
56	44		8.10 717	999	8.10 720	998	1.89 280	9.99 996	16		4
3	0	45	8.11 693		8.11 696		1.88 304	9.99 996	15	57	0
4	46		8.12 647	954	8.12 651	955	1.87 349	9.99 996	14		56
8	47		8.13 581	934	8.13 585	934	1.86 415	9.99 996	13		52
12	48		8.14 495	914	8.14 500	915	1.85 500	9.99 996	12		48
16	49		8.15 391	896	8.15 395	895	1.84 605	9.99 996	11		44
3	20	50	8.16 268		8.16 273		1.83 727	9.99 995	10	56	40
24	51		8.17 128	860	8.17 133	860	1.82 867	9.99 995	9		36
28	52		8.17 971	843	8.17 976	843	1.82 024	9.99 995	8		32
32	53		8.18 798	827	8.18 804	828	1.81 196	9.99 995	7		28
36	54		8.19 610	812	8.19 616	812	1.80 384	9.99 995	6		24
3	40	55	8.20 407		8.20 413		1.79 587	9.99 994	5	56	20
44	56		8.21 189	782	8.21 195	782	1.78 805	9.99 994	4		16
48	57		8.21 958	769	8.21 964	769	1.78 036	9.99 994	3		12
52	58		8.22 713	755	8.22 720	756	1.77 280	9.99 994	2		8
56	59		8.23 456	743	8.23 462	742	1.76 538	9.99 994	1		4
4	0	60	8.24 186		8.24 192		1.75 808	9.99 993	0	56	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.			m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°

1°

m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.		
4	0	0	8.24 186		8.24 192		1.75 808	9.99 993	60	56 0
	4	1	8.24 903	717	8.24 910	718	1.75 090	9.99 993	59	56
	8	2	8.25 609	706	8.25 616	706	1.74 384	9.99 993	58	52
	12	3	8.26 304	695	8.26 312	696	1.73 688	9.99 993	57	48
	16	4	8.26 988	684	8.26 996	684	1.73 004	9.99 992	56	44
				673		673				
4	20	5	8.27 661		8.27 669		1.72 331	9.99 992	55	55 40
	24	6	8.28 324	663	8.28 332	663	1.71 668	9.99 992	54	36
	28	7	8.28 977	653	8.28 986	654	1.71 014	9.99 992	53	32
	32	8	8.29 621	644	8.29 629	643	1.70 371	9.99 992	52	28
	36	9	8.30 255	634	8.30 263	634	1.69 737	9.99 991	51	24
				624		625				
4	40	10	8.30 879		8.30 888		1.69 112	9.99 991	50	55 20
	44	11	8.31 495	616	8.31 505	617	1.68 495	9.99 991	49	16
	48	12	8.32 103	608	8.32 112	607	1.67 888	9.99 990	48	12
	52	13	8.32 702	599	8.32 711	599	1.67 289	9.99 990	47	8
	56	14	8.33 292	590	8.33 302	591	1.66 698	9.99 990	46	4
				583		584				
5	0	15	8.33 875		8.33 886		1.66 114	9.99 990	45	55 0
	4	16	8.34 450	575	8.34 461	575	1.65 539	9.99 989	44	56
	8	17	8.35 018	568	8.35 029	568	1.64 971	9.99 989	43	52
	12	18	8.35 578	560	8.35 590	561	1.64 410	9.99 989	42	48
	16	19	8.36 131	553	8.36 143	553	1.63 857	9.99 989	41	44
				547		546				
5	20	20	8.36 678		8.36 689		1.63 311	9.99 988	40	54 40
	24	21	8.37 217	539	8.37 229	540	1.62 771	9.99 988	39	36
	28	22	8.37 750	533	8.37 762	533	1.62 238	9.99 988	38	32
	32	23	8.38 276	526	8.38 289	527	1.61 711	9.99 987	37	28
	36	24	8.38 796	520	8.38 809	520	1.61 191	9.99 987	36	24
				514		514				
5	40	25	8.39 310		8.39 323		1.60 677	9.99 987	35	54 20
	44	26	8.39 818	508	8.39 832	509	1.60 168	9.99 986	34	16
	48	27	8.40 320	502	8.40 334	502	1.59 666	9.99 986	33	12
	52	28	8.40 816	496	8.40 830	496	1.59 170	9.99 986	32	8
	56	29	8.41 307	491	8.41 321	491	1.58 679	9.99 985	31	4
				485		486				
6	0	30	8.41 792		8.41 807		1.58 193	9.99 985	30	54 0
	4	31	8.42 272	480	8.42 287	480	1.57 713	9.99 985	29	56
	8	32	8.42 746	474	8.42 762	475	1.57 238	9.99 984	28	52
	12	33	8.43 216	470	8.43 232	470	1.56 768	9.99 984	27	48
	16	34	8.43 680	464	8.43 696	464	1.56 304	9.99 984	26	44
				459		460				
6	20	35	8.44 139		8.44 156		1.55 844	9.99 983	25	53 40
	24	36	8.44 594	455	8.44 611	455	1.55 389	9.99 983	24	36
	28	37	8.45 044	450	8.45 061	450	1.54 939	9.99 983	23	32
	32	38	8.45 489	445	8.45 507	446	1.54 493	9.99 982	22	28
	36	39	8.45 930	441	8.45 948	441	1.54 052	9.99 982	21	24
				436		437				
6	40	40	8.46 366		8.46 385		1.53 615	9.99 982	20	53 20
	44	41	8.46 799	433	8.46 817	432	1.53 183	9.99 981	19	16
	48	42	8.47 226	427	8.47 245	428	1.52 755	9.99 981	18	12
	52	43	8.47 650	424	8.47 669	424	1.52 331	9.99 981	17	8
	56	44	8.48 069	419	8.48 089	420	1.51 911	9.99 980	16	4
				416		416				
7	0	45	8.48 485		8.48 505		1.51 495	9.99 980	15	53 0
	4	46	8.48 896	411	8.48 917	412	1.51 083	9.99 979	14	56
	8	47	8.49 304	408	8.49 325	408	1.50 675	9.99 979	13	52
	12	48	8.49 708	404	8.49 729	404	1.50 271	9.99 979	12	48
	16	49	8.50 108	400	8.50 130	401	1.49 870	9.99 978	11	44
				396		397				
7	20	50	8.50 504		8.50 527		1.49 473	9.99 978	10	52 40
	24	51	8.50 897	393	8.50 920	393	1.49 080	9.99 977	9	36
	28	52	8.51 287	390	8.51 310	390	1.48 690	9.99 977	8	32
	32	53	8.51 673	386	8.51 696	386	1.48 304	9.99 977	7	28
	36	54	8.52 055	382	8.52 079	383	1.47 921	9.99 976	6	24
				379		380				
7	40	55	8.52 434		8.52 459		1.47 541	9.99 976	5	52 20
	44	56	8.52 810	376	8.52 835	376	1.47 165	9.99 975	4	16
	48	57	8.53 183	373	8.53 208	373	1.46 792	9.99 975	3	12
	52	58	8.53 552	369	8.53 578	370	1.46 422	9.99 974	2	8
	56	59	8.53 919	367	8.53 945	367	1.46 055	9.99 974	1	4
				363		363				
8	0	60	8.54 282		8.54 308		1.45 692	9.99 974	0	52 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	'	m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°			2°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.			
8	0	0	8.54 282		8.54 308		1.45 692	9.99 974	60	52	0
	4	1	8.54 642	360	8.54 669	361	1.45 331	9.99 973		59	56
	8	2	8.54 999	357	8.55 027	358	1.44 973	9.99 973		58	52
	12	3	8.55 354	355	8.55 382	355	1.44 618	9.99 972		57	48
	16	4	8.55 705	351	8.55 734	352	1.44 266	9.99 972		56	44
				349		349					
8	20	5	8.56 054		8.56 083		1.43 917	9.99 971	55	51	40
	24	6	8.56 400	346	8.56 429	346	1.43 571	9.99 971		54	36
	28	7	8.56 743	343	8.56 773	344	1.43 227	9.99 970		53	32
	32	8	8.57 084	341	8.57 114	341	1.42 886	9.99 970		52	28
	36	9	8.57 421	337	8.57 452	338	1.42 548	9.99 969		51	24
				336		336					
8	40	10	8.57 757		8.57 788		1.42 212	9.99 969	50	51	20
	44	11	8.58 089	332	8.58 121	333	1.41 879	9.99 968		49	16
	48	12	8.58 419	330	8.58 451	330	1.41 549	9.99 968		48	12
	52	13	8.58 747	328	8.58 779	328	1.41 221	9.99 967		47	8
	56	14	8.59 072	325	8.59 105	326	1.40 895	9.99 967		46	4
				323		323					
9	0	15	8.59 395		8.59 428		1.40 572	9.99 967	45	51	0
	4	16	8.59 715	320	8.59 749	321	1.40 251	9.99 966		44	56
	8	17	8.60 033	318	8.60 068	319	1.39 932	9.99 966		43	52
	12	18	8.60 349	316	8.60 384	316	1.39 616	9.99 965		42	48
	16	19	8.60 662	313	8.60 698	314	1.39 302	9.99 964		41	44
				311		311					
9	20	20	8.60 973		8.61 009		1.38 991	9.99 964	40	50	40
	24	21	8.61 282	309	8.61 319	310	1.38 681	9.99 963		39	36
	28	22	8.61 589	307	8.61 626	307	1.38 374	9.99 963		38	32
	32	23	8.61 894	305	8.61 931	305	1.38 069	9.99 962		37	28
	36	24	8.62 196	302	8.62 234	303	1.37 766	9.99 962		36	24
				301		301					
9	40	25	8.62 497		8.62 535		1.37 465	9.99 961	35	50	20
	44	26	8.62 795	298	8.62 834	299	1.37 166	9.99 961		34	16
	48	27	8.63 091	296	8.63 131	297	1.36 869	9.99 960		33	12
	52	28	8.63 385	294	8.63 426	295	1.36 574	9.99 960		32	8
	56	29	8.63 678	293	8.63 718	292	1.36 282	9.99 959		31	4
				290		291					
10	0	30	8.63 968		8.64 009		1.35 991	9.99 959	30	50	0
	4	31	8.64 255	288	8.64 298	289	1.35 702	9.99 958		29	56
	8	32	8.64 543	287	8.64 585	287	1.35 415	9.99 958		28	52
	12	33	8.64 827	284	8.64 870	285	1.35 130	9.99 957		27	48
	16	34	8.65 110	283	8.65 154	284	1.34 846	9.99 956		26	44
				281		281					
10	20	35	8.65 391		8.65 435		1.34 565	9.99 956	25	49	40
	24	36	8.65 670	279	8.65 715	280	1.34 285	9.99 955		24	36
	28	37	8.65 947	277	8.65 993	278	1.34 007	9.99 955		23	32
	32	38	8.66 223	276	8.66 269	276	1.33 731	9.99 954		22	28
	36	39	8.66 497	274	8.66 543	274	1.33 457	9.99 954		21	24
				272		273					
10	40	40	8.66 769		8.66 816		1.33 184	9.99 953	20	49	20
	44	41	8.67 039	270	8.67 087	271	1.32 913	9.99 952		19	16
	48	42	8.67 308	269	8.67 356	269	1.32 644	9.99 952		18	12
	52	43	8.67 575	267	8.67 624	268	1.32 376	9.99 951		17	8
	56	44	8.67 841	266	8.67 890	266	1.32 110	9.99 951		16	4
				263		264					
11	0	45	8.68 104		8.68 154		1.31 846	9.99 950	15	49	0
	4	46	8.68 367	263	8.68 417	263	1.31 583	9.99 949		14	56
	8	47	8.68 627	260	8.68 678	261	1.31 322	9.99 949		13	52
	12	48	8.68 886	259	8.68 938	260	1.31 062	9.99 948		12	48
	16	49	8.69 144	258	8.69 196	258	1.30 804	9.99 948		11	44
				256		257					
11	20	50	8.69 400		8.69 453		1.30 547	9.99 947	10	48	40
	24	51	8.69 654	254	8.69 708	255	1.30 292	9.99 946		9	36
	28	52	8.69 907	253	8.69 962	254	1.30 038	9.99 946		8	32
	32	53	8.70 159	252	8.70 214	252	1.29 786	9.99 945		7	28
	36	54	8.70 409	250	8.70 465	251	1.29 535	9.99 944		6	24
				249		249					
11	40	55	8.70 658		8.70 714		1.29 286	9.99 944	5	48	20
	44	56	8.70 905	247	8.70 962	248	1.29 038	9.99 943		4	16
	48	57	8.71 151	246	8.71 208	246	1.28 792	9.99 942		3	12
	52	58	8.71 395	244	8.71 453	245	1.28 547	9.99 942		2	8
	56	59	8.71 638	243	8.71 697	244	1.28 303	9.99 941		1	4
				242		243					
12	0	60	8.71 880		8.71 940		1.28 060	9.99 940	0	48	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.			m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°		3°									
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.			
12	0	0	8.71 880		8.71 940		1.28 060	9.99 940	60	48	0
	4	1	8.72 120	240	8.72 181	241	1.27 819	9.99 940	59		56
	8	2	8.72 359	239	8.72 420	239	1.27 580	9.99 939	58		52
	12	3	8.72 597	238	8.72 659	239	1.27 341	9.99 938	57		48
	16	4	8.72 834	237	8.72 896	237	1.27 104	9.99 938	56		44
				235		236					
12	20	5	8.73 069		8.73 132		1.26 868	9.99 937	55	47	40
	24	6	8.73 303	234	8.73 365	234	1.26 634	9.99 936	54		36
	28	7	8.73 535	232	8.73 600	234	1.26 400	9.99 936	53		32
	32	8	8.73 767	232	8.73 832	232	1.26 168	9.99 935	52		28
	36	9	8.73 997	230	8.74 063	231	1.25 937	9.99 934	51		24
				229		229					
12	40	10	8.74 226		8.74 292		1.25 708	9.99 934	50	47	20
	44	11	8.74 454	228	8.74 521	229	1.25 479	9.99 933	49		16
	48	12	8.74 680	226	8.74 748	227	1.25 252	9.99 932	48		12
	52	13	8.74 906	226	8.74 974	226	1.25 026	9.99 932	47		8
	56	14	8.75 130	224	8.75 199	225	1.24 801	9.99 931	46		4
				223		224					
13	0	15	8.75 353		8.75 423		1.24 577	9.99 930	45	47	0
	4	16	8.75 575	222	8.75 645	222	1.24 355	9.99 929	44		56
	8	17	8.75 795	220	8.75 867	222	1.24 133	9.99 929	43		52
	12	18	8.76 015	220	8.76 087	220	1.23 913	9.99 928	42		48
	16	19	8.76 234	219	8.76 306	219	1.23 694	9.99 927	41		44
				217		219					
13	20	20	8.76 451		8.76 525		1.23 475	9.99 926	40	46	40
	24	21	8.76 667	216	8.76 742	217	1.23 258	9.99 926	39		36
	28	22	8.76 883	216	8.76 958	216	1.23 042	9.99 925	38		32
	32	23	8.77 097	214	8.77 173	215	1.22 827	9.99 924	37		28
	36	24	8.77 310	213	8.77 387	214	1.22 613	9.99 923	36		24
				212		213					
13	40	25	8.77 522		8.77 600		1.22 400	9.99 923	35	46	20
	44	26	8.77 733	211	8.77 811	211	1.22 189	9.99 922	34		16
	48	27	8.77 943	210	8.78 022	211	1.21 978	9.99 921	33		12
	52	28	8.78 152	209	8.78 232	210	1.21 768	9.99 920	32		8
	56	29	8.78 360	208	8.78 441	209	1.21 559	9.99 920	31		4
				208		208					
14	0	30	8.78 568		8.78 649		1.21 351	9.99 919	30	46	0
	4	31	8.78 774	206	8.78 855	206	1.21 145	9.99 918	29		56
	8	32	8.78 979	205	8.79 061	206	1.20 939	9.99 917	28		52
	12	33	8.79 183	204	8.79 266	205	1.20 734	9.99 917	27		48
	16	34	8.79 386	203	8.79 470	204	1.20 530	9.99 916	26		44
				202		203					
14	20	35	8.79 588		8.79 673		1.20 327	9.99 915	25	45	40
	24	36	8.79 789	201	8.79 875	202	1.20 125	9.99 914	24		36
	28	37	8.79 990	201	8.80 076	201	1.19 924	9.99 913	23		32
	32	38	8.80 189	199	8.80 277	201	1.19 723	9.99 913	22		28
	36	39	8.80 388	199	8.80 476	199	1.19 524	9.99 912	21		24
				197		198					
14	40	40	8.80 585		8.80 674		1.19 326	9.99 911	20	45	20
	44	41	8.80 782	197	8.80 872	198	1.19 128	9.99 910	19		16
	48	42	8.80 978	196	8.81 068	196	1.18 932	9.99 909	18		12
	52	43	8.81 173	195	8.81 264	196	1.18 736	9.99 909	17		8
	56	44	8.81 367	194	8.81 459	195	1.18 541	9.99 908	16		4
				193		194					
15	0	45	8.81 560		8.81 653		1.18 347	9.99 907	15	45	0
	4	46	8.81 752	192	8.81 846	193	1.18 154	9.99 906	14		56
	8	47	8.81 944	192	8.82 038	192	1.17 962	9.99 905	13		52
	12	48	8.82 134	190	8.82 230	192	1.17 770	9.99 904	12		48
	16	49	8.82 324	190	8.82 420	190	1.17 580	9.99 904	11		44
				189		190					
15	20	50	8.82 513		8.82 610		1.17 390	9.99 903	10	44	40
	24	51	8.82 701	188	8.82 799	189	1.17 201	9.99 902	9		36
	28	52	8.82 888	187	8.82 987	188	1.17 013	9.99 901	8		32
	32	53	8.83 075	187	8.83 175	188	1.16 825	9.99 900	7		28
	36	54	8.83 261	186	8.83 361	186	1.16 639	9.99 899	6		24
				185		186					
15	40	55	8.83 446		8.83 547		1.16 453	9.99 898	5	44	20
	44	56	8.83 630	184	8.83 732	185	1.16 268	9.99 898	4		16
	48	57	8.83 813	183	8.83 916	184	1.16 084	9.99 897	3		12
	52	58	8.83 996	183	8.84 100	184	1.15 900	9.99 896	2		8
	56	59	8.84 177	181	8.84 282	182	1.15 718	9.99 895	1		4
				181		182					
16	0	60	8.84 358		8.84 464		1.15 536	9.99 894	0	44	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	'	m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0 <sup>h</sup>				4 <sup>o</sup>							
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.			
16	0	0	8.84 358	181	8.84 464	182	1.15 536	9.99 894	60	44	0
	4	1	8.84 539	179	8.84 646	180	1.15 354	9.99 893	59		56
	8	2	8.84 718	179	8.84 826	180	1.15 174	9.99 892	58		52
	12	3	8.84 897	178	8.85 006	179	1.14 994	9.99 891	57		48
	16	4	8.85 075	177	8.85 185	178	1.14 815	9.99 891	56		44
16	20	5	8.85 252		8.85 363		1.14 637	9.99 890	55	43	40
	24	6	8.85 429	177	8.85 540	177	1.14 460	9.99 889	54		36
	28	7	8.85 605	176	8.85 717	177	1.14 283	9.99 888	53		32
	32	8	8.85 780	175	8.85 893	176	1.14 107	9.99 887	52		28
	36	9	8.85 955	175	8.86 069	176	1.13 931	9.99 886	51		24
16	40	10	8.86 128		8.86 243		1.13 757	9.99 885	50	43	20
	44	11	8.86 301	173	8.86 417	174	1.13 583	9.99 884	49		16
	48	12	8.86 474	173	8.86 591	174	1.13 409	9.99 883	48		12
	52	13	8.86 645	171	8.86 763	172	1.13 237	9.99 882	47		8
	56	14	8.86 816	171	8.86 935	171	1.13 065	9.99 881	46		4
17	0	15	8.86 987		8.87 106		1.12 894	9.99 880	45	43	0
	4	16	8.87 156	169	8.87 277	170	1.12 723	9.99 879	44		56
	8	17	8.87 325	169	8.87 447	169	1.12 553	9.99 879	43		52
	12	18	8.87 494	167	8.87 616	169	1.12 384	9.99 878	42		48
	16	19	8.87 661	168	8.87 785	168	1.12 215	9.99 877	41		44
17	20	20	8.87 829		8.87 953		1.12 047	9.99 876	40	42	40
	24	21	8.87 995	166	8.88 120	167	1.11 880	9.99 875	39		36
	28	22	8.88 161	165	8.88 287	166	1.11 713	9.99 874	38		32
	32	23	8.88 326	164	8.88 453	165	1.11 547	9.99 873	37		28
	36	24	8.88 490	164	8.88 618	165	1.11 382	9.99 872	36		24
17	40	25	8.88 654		8.88 783		1.11 217	9.99 871	35	42	20
	44	26	8.88 817	163	8.88 948	165	1.11 052	9.99 870	34		16
	48	27	8.88 980	163	8.89 111	163	1.10 889	9.99 869	33		12
	52	28	8.89 142	162	8.89 274	163	1.10 726	9.99 868	32		8
	56	29	8.89 304	162	8.89 437	163	1.10 563	9.99 867	31		4
18	0	30	8.89 464		8.89 598		1.10 402	9.99 866	30	42	0
	4	31	8.89 625	161	8.89 760	162	1.10 240	9.99 865	29		56
	8	32	8.89 784	159	8.89 920	160	1.10 080	9.99 864	28		52
	12	33	8.89 943	159	8.90 080	160	1.09 920	9.99 863	27		48
	16	34	8.90 102	158	8.90 240	159	1.09 760	9.99 862	26		44
18	20	35	8.90 260		8.90 399		1.09 601	9.99 861	25	41	40
	24	36	8.90 417	157	8.90 557	158	1.09 443	9.99 860	24		36
	28	37	8.90 574	156	8.90 715	157	1.09 285	9.99 859	23		32
	32	38	8.90 730	155	8.90 872	157	1.09 128	9.99 858	22		28
	36	39	8.90 885	155	8.91 029	156	1.08 971	9.99 857	21		24
18	40	40	8.91 040		8.91 185		1.08 815	9.99 856	20	41	20
	44	41	8.91 195	155	8.91 340	155	1.08 660	9.99 855	19		16
	48	42	8.91 349	154	8.91 495	155	1.08 505	9.99 854	18		12
	52	43	8.91 502	153	8.91 650	155	1.08 350	9.99 853	17		8
	56	44	8.91 655	152	8.91 803	154	1.08 197	9.99 852	16		4
19	0	45	8.91 807		8.91 957		1.08 043	9.99 851	15	41	0
	4	46	8.91 959	152	8.92 110	153	1.07 890	9.99 850	14		56
	8	47	8.92 110	151	8.92 262	152	1.07 738	9.99 848	13		52
	12	48	8.92 261	151	8.92 414	151	1.07 586	9.99 847	12		48
	16	49	8.92 411	150	8.92 565	151	1.07 435	9.99 846	11		44
19	20	50	8.92 561		8.92 716		1.07 284	9.99 845	10	40	40
	24	51	8.92 710	149	8.92 866	150	1.07 134	9.99 844	9		36
	28	52	8.92 859	148	8.93 016	149	1.06 984	9.99 843	8		32
	32	53	8.93 007	147	8.93 165	148	1.06 835	9.99 842	7		28
	36	54	8.93 154	147	8.93 313	149	1.06 687	9.99 841	6		24
19	40	55	8.93 301		8.93 462		1.06 538	9.99 840	5	40	20
	44	56	8.93 448	147	8.93 609	147	1.06 391	9.99 839	4		16
	48	57	8.93 594	146	8.93 756	147	1.06 244	9.99 838	3		12
	52	58	8.93 740	146	8.93 903	146	1.06 097	9.99 837	2		8
	56	59	8.93 885	145	8.94 049	146	1.05 951	9.99 836	1		4
20	0	60	8.94 030		8.94 185		1.05 805	9.99 834	0	40	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	'	m.	s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°		5°									
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.			
20	0	0	8.94 030		8.94 195		1.05 805	9.99 834	60	40	0
	4	1	8.94 174	144	8.94 340	145	1.05 660	9.99 833	59		56
	8	2	8.94 317	143	8.94 485	145	1.05 515	9.99 832	58		52
	12	3	8.94 461	144	8.94 630	145	1.05 370	9.99 831	57		48
	16	4	8.94 605	142	8.94 773	143	1.05 227	9.99 830	56		44
				143		144					
20	20	5	8.94 746		8.94 917		1.05 083	9.99 829	55	39	40
	24	6	8.94 887	141	8.95 060	142	1.04 940	9.99 828	54		36
	28	7	8.95 029	142	8.95 202	142	1.04 798	9.99 827	53		32
	32	8	8.95 170	141	8.95 344	142	1.04 656	9.99 825	52		28
	36	9	8.95 310	140	8.95 486	141	1.04 514	9.99 824	51		24
				140							
20	40	10	8.95 450		8.95 627		1.04 373	9.99 823	50	39	20
	44	11	8.95 589	139	8.95 767	141	1.04 233	9.99 822	49		16
	48	12	8.95 728	139	8.95 908	139	1.04 092	9.99 821	48		12
	52	13	8.95 867	138	8.96 047	140	1.03 953	9.99 820	47		8
	56	14	8.96 005	138	8.96 187	138	1.03 813	9.99 819	46		4
21	0	15	8.96 143		8.96 325		1.03 675	9.99 817	45	39	0
	4	16	8.96 280	137	8.96 464	139	1.03 536	9.99 816	44		56
	8	17	8.96 417	137	8.96 602	138	1.03 398	9.99 815	43		52
	12	18	8.96 553	136	8.96 739	137	1.03 261	9.99 814	42		48
	16	19	8.96 689	136	8.96 877	136	1.03 123	9.99 813	41		44
21	20	20	8.96 825		8.97 013		1.02 987	9.99 812	40	38	40
	24	21	8.96 960	135	8.97 150	137	1.02 850	9.99 810	39		36
	28	22	8.97 095	135	8.97 285	135	1.02 715	9.99 809	38		32
	32	23	8.97 229	134	8.97 421	136	1.02 579	9.99 808	37		28
	36	24	8.97 363	134	8.97 556	135	1.02 444	9.99 807	36		24
				133		135					
21	40	25	8.97 496		8.97 691		1.02 309	9.99 806	35	38	20
	44	26	8.97 629	133	8.97 825	134	1.02 175	9.99 804	34		16
	48	27	8.97 762	133	8.97 959	134	1.02 041	9.99 803	33		12
	52	28	8.97 894	132	8.98 092	133	1.01 908	9.99 802	32		8
	56	29	8.98 026	132	8.98 225	133	1.01 775	9.99 801	31		4
				131		133					
22	0	30	8.98 157		8.98 358		1.01 642	9.99 800	30	38	0
	4	31	8.98 288	131	8.98 490	132	1.01 510	9.99 798	29		56
	8	32	8.98 419	131	8.98 622	131	1.01 378	9.99 797	28		52
	12	33	8.98 549	130	8.98 753	131	1.01 247	9.99 796	27		48
	16	34	8.98 679	129	8.98 884	131	1.01 116	9.99 795	26		44
22	20	35	8.98 808		8.99 015		1.00 985	9.99 793	25	37	40
	24	36	8.98 937	129	8.99 145	130	1.00 855	9.99 792	24		36
	28	37	8.99 066	128	8.99 275	130	1.00 725	9.99 791	23		32
	32	38	8.99 194	128	8.99 405	129	1.00 595	9.99 790	22		28
	36	39	8.99 322	128	8.99 534	128	1.00 466	9.99 788	21		24
22	40	40	8.99 450		8.99 662		1.00 338	9.99 787	20	37	20
	44	41	8.99 577	127	8.99 791	129	1.00 209	9.99 786	19		16
	48	42	8.99 704	127	8.99 919	128	1.00 081	9.99 785	18		12
	52	43	8.99 830	126	9.00 046	127	0.99 954	9.99 783	17		8
	56	44	8.99 956	126	9.00 174	128	0.99 826	9.99 782	16		4
				125		127					
23	0	45	9.00 082		9.00 301		0.99 699	9.99 781	15	37	0
	4	46	9.00 207	125	9.00 427	126	0.99 573	9.99 780	14		56
	8	47	9.00 332	125	9.00 553	126	0.99 447	9.99 778	13		52
	12	48	9.00 456	124	9.00 679	126	0.99 321	9.99 777	12		48
	16	49	9.00 581	123	9.00 805	125	0.99 195	9.99 776	11		44
23	20	50	9.00 704		9.00 930		0.99 070	9.99 775	10	36	40
	24	51	9.00 828	124	9.01 055	125	0.98 945	9.99 773	9		36
	28	52	9.00 951	123	9.01 179	124	0.98 821	9.99 772	8		32
	32	53	9.01 074	122	9.01 303	124	0.98 697	9.99 771	7		28
	36	54	9.01 196	122	9.01 427	123	0.98 573	9.99 769	6		24
23	40	55	9.01 318		9.01 550		0.98 450	9.99 768	5	36	20
	44	56	9.01 440	122	9.01 673	123	0.98 327	9.99 767	4		16
	48	57	9.01 561	121	9.01 796	123	0.98 204	9.99 765	3		12
	52	58	9.01 682	121	9.01 918	122	0.98 082	9.99 764	2		8
	56	59	9.01 803	120	9.02 040	122	0.97 960	9.99 763	1		4
24	0	60	9.01 923		9.02 162		0.97 838	9.99 761	0	36	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	'	m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°		60°									
m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.				
24	0	0	9.01 923	120	9.02 162	121	0.97 838	9.99 761	60	36	0
	4	1	9.02 043	120	9.02 283	121	0.97 717	9.99 760		59	56
	8	2	9.02 163	120	9.02 404	121	0.97 596	9.99 759		58	52
	12	3	9.02 283	120	9.02 525	121	0.97 475	9.99 757		57	48
	16	4	9.02 402	119	9.02 645	120	0.97 355	9.99 756		56	44
				118		121					
24	20	5	9.02 520	119	9.02 766	119	0.97 234	9.99 755	55	35	40
	24	6	9.02 639	118	9.02 885	120	0.97 115	9.99 753		54	36
	28	7	9.02 757	117	9.03 005	119	0.96 995	9.99 752		53	32
	32	8	9.02 874	118	9.03 124	118	0.96 876	9.99 751		52	28
	36	9	9.02 992	117	9.03 242	119	0.96 758	9.99 749		51	24
24	40	10	9.03 109	117	9.03 361	118	0.96 639	9.99 748	50	35	20
	44	11	9.03 226	116	9.03 479	118	0.96 521	9.99 747		49	16
	48	12	9.03 342	116	9.03 597	117	0.96 403	9.99 745		48	12
	52	13	9.03 458	116	9.03 714	118	0.96 286	9.99 744		47	8
	56	14	9.03 574	116	9.03 832	116	0.96 168	9.99 742		46	4
25	0	15	9.03 690	115	9.03 948	117	0.96 052	9.99 741	45	35	0
	4	16	9.03 805	115	9.04 065	117	0.95 935	9.99 740		44	56
	8	17	9.03 920	114	9.04 181	116	0.95 819	9.99 738		43	52
	12	18	9.04 034	114	9.04 297	116	0.95 703	9.99 737		42	48
	16	19	9.04 149	113	9.04 413	115	0.95 587	9.99 736		41	44
25	20	20	9.04 262	114	9.04 528	115	0.95 472	9.99 734	40	34	40
	24	21	9.04 376	114	9.04 643	115	0.95 357	9.99 733		39	36
	28	22	9.04 490	113	9.04 758	115	0.95 242	9.99 731		38	32
	32	23	9.04 603	112	9.04 873	115	0.95 127	9.99 730		37	28
	36	24	9.04 715	113	9.04 987	114	0.95 013	9.99 728		36	24
25	40	25	9.04 828	112	9.05 101	113	0.94 899	9.99 727	35	34	20
	44	26	9.04 940	112	9.05 214	114	0.94 786	9.99 726		34	16
	48	27	9.05 052	112	9.05 328	113	0.94 672	9.99 724		33	12
	52	28	9.05 164	111	9.05 441	112	0.94 559	9.99 723		32	8
	56	29	9.05 275	111	9.05 553	113	0.94 447	9.99 721		31	4
26	0	30	9.05 386	111	9.05 666	112	0.94 334	9.99 720	30	34	0
	4	31	9.05 497	110	9.05 778	112	0.94 222	9.99 718		29	56
	8	32	9.05 607	110	9.05 890	112	0.94 110	9.99 717		28	52
	12	33	9.05 717	110	9.06 002	111	0.93 998	9.99 716		27	48
	16	34	9.05 827	110	9.06 113	111	0.93 887	9.99 714		26	44
26	20	35	9.05 937	109	9.06 224	111	0.93 776	9.99 713	25	33	40
	24	36	9.06 046	109	9.06 335	110	0.93 665	9.99 711		24	36
	28	37	9.06 155	109	9.06 445	110	0.93 555	9.99 710		23	32
	32	38	9.06 264	109	9.06 556	111	0.93 444	9.99 708		22	28
	36	39	9.06 372	109	9.06 666	110	0.93 334	9.99 707		21	24
26	40	40	9.06 481	108	9.06 775	110	0.93 225	9.99 705	20	33	20
	44	41	9.06 589	107	9.06 885	109	0.93 115	9.99 704		19	16
	48	42	9.06 696	107	9.06 994	109	0.93 006	9.99 702		18	12
	52	43	9.06 804	108	9.07 103	109	0.92 897	9.99 701		17	8
	56	44	9.06 911	107	9.07 211	108	0.92 789	9.99 699		16	4
27	0	45	9.07 018	106	9.07 320	108	0.92 680	9.99 698	15	33	0
	4	46	9.07 124	107	9.07 428	108	0.92 572	9.99 696		14	56
	8	47	9.07 231	106	9.07 536	107	0.92 464	9.99 695		13	52
	12	48	9.07 337	105	9.07 643	108	0.92 357	9.99 693		12	48
	16	49	9.07 442	106	9.07 751	107	0.92 249	9.99 692		11	44
27	20	50	9.07 548	105	9.07 858	106	0.92 142	9.99 690	10	32	40
	24	51	9.07 653	105	9.07 964	107	0.92 036	9.99 689		9	36
	28	52	9.07 758	105	9.08 071	106	0.91 929	9.99 687		8	32
	32	53	9.07 863	105	9.08 177	106	0.91 823	9.99 686		7	28
	36	54	9.07 968	104	9.08 283	106	0.91 717	9.99 684		6	24
27	40	55	9.08 072	104	9.08 389	106	0.91 611	9.99 683	5	32	20
	44	56	9.08 176	104	9.08 495	105	0.91 505	9.99 681		4	16
	48	57	9.08 280	103	9.08 600	105	0.91 400	9.99 680		3	12
	52	58	9.08 383	103	9.08 705	105	0.91 295	9.99 678		2	8
	56	59	9.08 486	103	9.08 810	104	0.91 190	9.99 677		1	4
28	0	60	9.08 589		9.08 914		0.91 086	9.99 675	0	32	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.			m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0<sup>h</sup>7<sup>o</sup>

m.	s.	t	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.		
28	0	0	9.08 589	103	9.08 914	105	0.91 086	9.99 675	60	32 0
	4	1	9.08 692	103	9.09 019	104	0.90 981	9.99 674	59	56
	8	2	9.08 795	102	9.09 123	104	0.90 877	9.99 672	58	52
	12	3	9.08 897	102	9.09 227	103	0.90 773	9.99 670	57	48
	16	4	9.08 999	102	9.09 330	104	0.90 670	9.99 669	56	44
28	20	5	9.09 101	101	9.09 434	103	0.90 566	9.99 667	55	31 40
	24	6	9.09 202	102	9.09 537	103	0.90 463	9.99 666	54	36
	28	7	9.09 304	101	9.09 640	102	0.90 360	9.99 664	53	32
	32	8	9.09 405	101	9.09 742	103	0.90 258	9.99 663	52	28
	36	9	9.09 506	100	9.09 845	102	0.90 155	9.99 661	51	24
28	40	10	9.09 606	101	9.09 947	102	0.90 053	9.99 659	50	31 20
	44	11	9.09 707	100	9.10 049	101	0.89 951	9.99 658	59	16
	48	12	9.09 807	100	9.10 150	102	0.89 850	9.99 656	48	12
	52	13	9.09 907	99	9.10 252	101	0.89 748	9.99 655	47	8
	56	14	9.10 006	100	9.10 353	101	0.89 647	9.99 653	46	4
29	0	15	9.10 106	99	9.10 454	101	0.89 546	9.99 651	45	31 0
	4	16	9.10 205	99	9.10 555	101	0.89 445	9.99 650	44	56
	8	17	9.10 304	98	9.10 656	100	0.89 344	9.99 648	43	52
	12	18	9.10 402	99	9.10 756	100	0.89 244	9.99 647	42	48
	16	19	9.10 501	98	9.10 856	100	0.89 144	9.99 645	41	44
29	20	20	9.10 599	98	9.10 956	100	0.89 044	9.99 643	40	30 40
	24	21	9.10 697	98	9.11 056	99	0.88 944	9.99 642	39	36
	28	22	9.10 795	98	9.11 155	99	0.88 845	9.99 640	38	32
	32	23	9.10 893	97	9.11 254	99	0.88 746	9.99 638	37	28
	36	24	9.10 990	97	9.11 353	99	0.88 647	9.99 637	36	24
29	40	25	9.11 087	97	9.11 452	99	0.88 548	9.99 635	35	30 20
	44	26	9.11 184	97	9.11 551	98	0.88 449	9.99 633	34	16
	48	27	9.11 281	96	9.11 649	98	0.88 351	9.99 632	33	12
	52	28	9.11 377	96	9.11 747	98	0.88 253	9.99 630	32	8
	56	29	9.11 474	96	9.11 845	98	0.88 155	9.99 629	31	4
30	0	30	9.11 570	95	9.11 943	97	0.88 057	9.99 627	30	30 0
	4	31	9.11 666	95	9.12 040	98	0.87 960	9.99 625	29	56
	8	32	9.11 761	95	9.12 138	97	0.87 862	9.99 624	28	52
	12	33	9.11 857	95	9.12 235	97	0.87 765	9.99 622	27	48
	16	34	9.11 952	95	9.12 332	96	0.87 668	9.99 620	26	44
30	20	35	9.12 047	95	9.12 428	97	0.87 572	9.99 618	25	29 40
	24	36	9.12 142	94	9.12 525	96	0.87 475	9.99 617	24	36
	28	37	9.12 236	94	9.12 621	96	0.87 379	9.99 615	23	32
	32	38	9.12 331	94	9.12 717	96	0.87 283	9.99 613	22	28
	36	39	9.12 425	94	9.12 813	96	0.87 187	9.99 612	21	24
30	40	40	9.12 519	93	9.12 909	95	0.87 091	9.99 610	20	29 20
	44	41	9.12 612	94	9.13 004	95	0.86 996	9.99 608	19	16
	48	42	9.12 706	93	9.13 099	95	0.86 901	9.99 607	18	12
	52	43	9.12 799	93	9.13 194	95	0.86 806	9.99 605	17	8
	56	44	9.12 892	93	9.13 289	95	0.86 711	9.99 603	16	4
31	0	45	9.12 985	93	9.13 384	94	0.86 616	9.99 601	15	29 0
	4	46	9.13 078	93	9.13 478	95	0.86 522	9.99 600	14	56
	8	47	9.13 171	92	9.13 573	94	0.86 427	9.99 598	13	52
	12	48	9.13 263	92	9.13 667	94	0.86 333	9.99 596	12	48
	16	49	9.13 355	92	9.13 761	93	0.86 239	9.99 595	11	44
31	20	50	9.13 447	92	9.13 854	94	0.86 146	9.99 593	10	28 40
	24	51	9.13 539	91	9.13 948	93	0.86 052	9.99 591	9	36
	28	52	9.13 630	92	9.14 041	93	0.85 959	9.99 589	8	32
	32	53	9.13 722	91	9.14 134	93	0.85 866	9.99 588	7	28
	36	54	9.13 813	91	9.14 227	93	0.85 773	9.99 586	6	24
31	40	55	9.13 904	90	9.14 320	92	0.85 680	9.99 584	5	28 20
	44	56	9.13 994	91	9.14 412	92	0.85 588	9.99 582	4	16
	48	57	9.14 085	90	9.14 504	93	0.85 496	9.99 581	3	12
	52	58	9.14 175	91	9.14 597	91	0.85 403	9.99 579	2	8
	56	59	9.14 266	90	9.14 688	92	0.85 312	9.99 577	1	4
32	0	60	9.14 356		9.14 780		0.85 220	9.99 575	0	28 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0 <sup>h</sup>			8 <sup>o</sup>								
m.	s.	<i>t</i>	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.			
32	0	0	9.14 356		9.14 780		0.85 220	9.99 575	60	28	0
	4	1	9.14 445	89	9.14 872	92	0.85 128	9.99 574	59		56
	8	2	9.14 535	90	9.14 963	91	0.85 037	9.99 572	58		52
	12	3	9.14 624	89	9.15 054	91	0.84 946	9.99 570	57		48
	16	4	9.14 714	90	9.15 145	91	0.84 855	9.99 568	56		44
				89							
32	20	5	9.14 803		9.15 236		0.84 764	9.99 566	55	27	40
	24	6	9.14 891	88	9.15 327	91	0.84 673	9.99 565	54		36
	28	7	9.14 980	89	9.15 417	90	0.84 583	9.99 563	53		32
	32	8	9.15 069	89	9.15 508	91	0.84 492	9.99 561	52		28
	36	9	9.15 157	88	9.15 598	90	0.84 402	9.99 559	51		24
				88							
32	40	10	9.15 245		9.15 688		0.84 312	9.99 557	50	27	20
	44	11	9.15 333	88	9.15 777	89	0.84 223	9.99 556	49		16
	48	12	9.15 421	88	9.15 867	90	0.84 133	9.99 554	48		12
	52	13	9.15 508	87	9.15 956	89	0.84 044	9.99 552	47		8
	56	14	9.15 596	88	9.16 046	90	0.83 954	9.99 550	46		4
				87							
33	0	15	9.15 683		9.16 135		0.83 865	9.99 548	45	27	0
	4	16	9.15 770	87	9.16 224	89	0.83 776	9.99 546	44		56
	8	17	9.15 857	87	9.16 312	88	0.83 688	9.99 545	43		52
	12	18	9.15 944	87	9.16 401	89	0.83 599	9.99 543	42		48
	16	19	9.16 030	86	9.16 489	88	0.83 511	9.99 541	41		44
				86							
33	20	20	9.16 116		9.16 577		0.83 423	9.99 539	40	26	40
	24	21	9.16 203	87	9.16 665	88	0.83 335	9.99 537	39		36
	28	22	9.16 289	86	9.16 753	88	0.83 247	9.99 535	38		32
	32	23	9.16 374	85	9.16 841	88	0.83 159	9.99 533	37		28
	36	24	9.16 460	86	9.16 928	87	0.83 072	9.99 532	36		24
				85							
33	40	25	9.16 545		9.17 016		0.82 984	9.99 530	35	26	20
	44	26	9.16 631	86	9.17 103	87	0.82 897	9.99 528	34		16
	48	27	9.16 716	85	9.17 190	87	0.82 810	9.99 526	33		12
	52	28	9.16 801	85	9.17 277	87	0.82 723	9.99 524	32		8
	56	29	9.16 886	85	9.17 363	86	0.82 637	9.99 522	31		4
				84							
34	0	30	9.16 970		9.17 450		0.82 550	9.99 520	30	26	0
	4	31	9.17 055	85	9.17 536	86	0.82 464	9.99 518	29		56
	8	32	9.17 139	84	9.17 622	86	0.82 378	9.99 517	28		52
	12	33	9.17 223	84	9.17 708	86	0.82 292	9.99 515	27		48
	16	34	9.17 307	84	9.17 794	86	0.82 206	9.99 513	26		44
				84							
34	20	35	9.17 391		9.17 880		0.82 120	9.99 511	25	25	40
	24	36	9.17 474	83	9.17 965	85	0.82 035	9.99 509	24		36
	28	37	9.17 558	84	9.18 051	86	0.81 949	9.99 507	23		32
	32	38	9.17 641	83	9.18 136	85	0.81 864	9.99 505	22		28
	36	39	9.17 724	83	9.18 221	85	0.81 779	9.99 503	21		24
				83							
34	40	40	9.17 807		9.18 306		0.81 694	9.99 501	20	25	20
	44	41	9.17 890	83	9.18 391	85	0.81 609	9.99 499	19		16
	48	42	9.17 973	83	9.18 475	84	0.81 525	9.99 497	18		12
	52	43	9.18 055	82	9.18 560	85	0.81 440	9.99 495	17		8
	56	44	9.18 137	82	9.18 644	84	0.81 356	9.99 494	16		4
				83							
35	0	45	9.18 220		9.18 728		0.81 272	9.99 492	15	25	0
	4	46	9.18 302	82	9.18 812	84	0.81 188	9.99 490	14		56
	8	47	9.18 383	81	9.18 896	84	0.81 104	9.99 488	13		52
	12	48	9.18 465	82	9.18 979	83	0.81 021	9.99 486	12		48
	16	49	9.18 547	82	9.19 063	84	0.80 937	9.99 484	11		44
				81							
35	20	50	9.18 628		9.19 146		0.80 854	9.99 482	10	24	40
	24	51	9.18 709	81	9.19 229	83	0.80 771	9.99 480	9		36
	28	52	9.18 790	81	9.19 312	83	0.80 688	9.99 478	8		32
	32	53	9.18 871	81	9.19 395	83	0.80 605	9.99 476	7		28
	36	54	9.18 952	81	9.19 478	83	0.80 522	9.99 474	6		24
				81							
35	40	55	9.19 033		9.19 561		0.80 439	9.99 472	5	24	20
	44	56	9.19 113	80	9.19 643	82	0.80 357	9.99 470	4		16
	48	57	9.19 193	80	9.19 725	82	0.80 275	9.99 468	3		12
	52	58	9.19 273	80	9.19 807	82	0.80 193	9.99 466	2		8
	56	59	9.19 353	80	9.19 889	82	0.80 111	9.99 464	1		4
				80							
36	0	60	9.19 433		9.19 971		0.80 029	9.99 462	0	24	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	<i>t</i>	m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°		90°									
m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.			
36	0	0	9.19 433		9.19 971		0.80 029	9.99 462	60	24	0
	4	1	9.19 513	80	9.20 053	82	0.79 947	9.99 460			56
	8	2	9.19 592	79	9.20 134	81	0.79 866	9.99 458			52
	12	3	9.19 672	79	9.20 216	82	0.79 784	9.99 456			48
	16	4	9.19 751	79	9.20 297	81	0.79 703	9.99 454			44
36	20	5	9.19 830	79	9.20 378	81	0.79 622	9.99 452	55	23	40
	24	6	9.19 909	79	9.20 459	81	0.79 541	9.99 450			36
	28	7	9.19 988	79	9.20 540	81	0.79 460	9.99 448			32
	32	8	9.20 067	78	9.20 621	80	0.79 379	9.99 446			28
	36	9	9.20 145	78	9.20 701	81	0.79 299	9.99 444			24
36	40	10	9.20 223	79	9.20 782	80	0.79 218	9.99 442	50	23	20
	44	11	9.20 302	78	9.20 862	80	0.79 138	9.99 440			16
	48	12	9.20 380	78	9.20 942	80	0.79 058	9.99 438			12
	52	13	9.20 458	77	9.21 022	80	0.78 978	9.99 436			8
	56	14	9.20 535	78	9.21 102	80	0.78 898	9.99 434			4
37	0	15	9.20 613	78	9.21 182	79	0.78 818	9.99 432	45	23	0
	4	16	9.20 691	77	9.21 261	80	0.78 739	9.99 429			56
	8	17	9.20 768	77	9.21 341	79	0.78 659	9.99 427			52
	12	18	9.20 845	77	9.21 420	79	0.78 580	9.99 425			48
	16	19	9.20 922	77	9.21 499	79	0.78 501	9.99 423			44
37	20	20	9.20 999	77	9.21 578	79	0.78 422	9.99 421	40	22	40
	24	21	9.21 076	77	9.21 657	79	0.78 343	9.99 419			36
	28	22	9.21 153	76	9.21 736	78	0.78 264	9.99 417			32
	32	23	9.21 229	77	9.21 814	79	0.78 186	9.99 415			28
	36	24	9.21 306	76	9.21 893	78	0.78 107	9.99 413			24
37	40	25	9.21 382	76	9.21 971	78	0.78 029	9.99 411	35	22	20
	44	26	9.21 458	76	9.22 049	78	0.77 951	9.99 409			16
	48	27	9.21 534	76	9.22 127	78	0.77 873	9.99 407			12
	52	28	9.21 610	75	9.22 205	78	0.77 795	9.99 404			8
	56	29	9.21 685	76	9.22 283	78	0.77 717	9.99 402			4
38	0	30	9.21 761	75	9.22 361	77	0.77 639	9.99 400	30	22	0
	4	31	9.21 836	76	9.22 438	78	0.77 562	9.99 398			56
	8	32	9.21 912	75	9.22 516	77	0.77 484	9.99 396			52
	12	33	9.21 987	75	9.22 593	77	0.77 407	9.99 394			48
	16	34	9.22 062	75	9.22 670	77	0.77 330	9.99 392			44
38	20	35	9.22 137	74	9.22 747	77	0.77 253	9.99 390	25	21	40
	24	36	9.22 211	75	9.22 824	77	0.77 176	9.99 388			36
	28	37	9.22 286	75	9.22 901	77	0.77 099	9.99 385			32
	32	38	9.22 361	74	9.22 977	76	0.77 023	9.99 383			28
	36	39	9.22 435	74	9.23 054	76	0.76 946	9.99 381			24
38	40	40	9.22 509	74	9.23 130	76	0.76 870	9.99 379	20	21	20
	44	41	9.22 583	74	9.23 206	77	0.76 794	9.99 377			16
	48	42	9.22 657	74	9.23 283	76	0.76 717	9.99 375			12
	52	43	9.22 731	74	9.23 359	76	0.76 641	9.99 372			8
	56	44	9.22 805	73	9.23 435	75	0.76 565	9.99 370			4
39	0	45	9.22 878	74	9.23 510	76	0.76 490	9.99 368	15	21	0
	4	46	9.22 952	73	9.23 586	75	0.76 414	9.99 366			56
	8	47	9.23 025	73	9.23 661	76	0.76 339	9.99 364			52
	12	48	9.23 098	73	9.23 737	75	0.76 263	9.99 362			48
	16	49	9.23 171	73	9.23 812	75	0.76 188	9.99 359			44
39	20	50	9.23 244	73	9.23 887	75	0.76 113	9.99 357	10	20	40
	24	51	9.23 317	73	9.23 962	75	0.76 038	9.99 355			36
	28	52	9.23 390	72	9.24 037	75	0.75 963	9.99 353			32
	32	53	9.23 462	73	9.24 112	74	0.75 888	9.99 351			28
	36	54	9.23 535	72	9.24 186	74	0.75 814	9.99 348			24
39	40	55	9.23 607	72	9.24 261	74	0.75 739	9.99 346	5	20	20
	44	56	9.23 679	73	9.24 335	75	0.75 665	9.99 344			16
	48	57	9.23 752	71	9.24 410	74	0.75 590	9.99 342			12
	52	58	9.23 823	72	9.24 484	74	0.75 516	9.99 340			8
	56	59	9.23 895	72	9.24 558	74	0.75 442	9.99 337			4
40	0	60	9.23 967		9.24 632		0.75 368	9.99 335	0	20	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.		m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°			10°								
m.	s.	°	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
40	0	0	9.25 967		9.24 632		0.75 368	9.99 335		60	20 0
	4	1	9.24 039	72	9.24 706	74	0.75 294	9.99 333	2	59	56
	8	2	9.24 110	71	9.24 779	73	0.75 221	9.99 331	2	58	52
	12	3	9.24 181	71	9.24 853	74	0.75 147	9.99 328	3	57	48
	16	4	9.24 253	72	9.24 926	73	0.75 074	9.99 326	2	56	44
40	20	5	9.24 324	71	9.25 000	74	0.75 000	9.99 324	2	55	40
	24	6	9.24 395	71	9.25 073	73	0.74 927	9.99 322	2	54	36
	28	7	9.24 466	71	9.25 146	73	0.74 854	9.99 319	3	53	32
	32	8	9.24 536	70	9.25 219	73	0.74 781	9.99 317	2	52	28
	36	9	9.24 607	71	9.25 292	73	0.74 708	9.99 315	2	51	24
40	40	10	9.24 677	70	9.25 365	73	0.74 635	9.99 313	2	50	20
	44	11	9.24 748	71	9.25 437	72	0.74 563	9.99 310	3	49	16
	48	12	9.24 818	70	9.25 510	73	0.74 490	9.99 308	2	48	12
	52	13	9.24 888	70	9.25 582	72	0.74 418	9.99 306	2	47	8
	56	14	9.24 958	70	9.25 655	73	0.74 345	9.99 304	2	46	4
41	0	15	9.25 028	70	9.25 727	72	0.74 273	9.99 301	3	45	0
	4	16	9.25 098	70	9.25 799	72	0.74 201	9.99 299	2	44	56
	8	17	9.25 168	70	9.25 871	72	0.74 129	9.99 297	2	43	52
	12	18	9.25 237	69	9.25 943	72	0.74 057	9.99 294	3	42	48
	16	19	9.25 307	70	9.26 015	72	0.73 985	9.99 292	2	41	44
41	20	20	9.25 376	69	9.26 086	71	0.73 914	9.99 290	2	40	40
	24	21	9.25 445	69	9.26 158	72	0.73 842	9.99 288	2	39	36
	28	22	9.25 514	69	9.26 229	71	0.73 771	9.99 285	3	38	32
	32	23	9.25 583	69	9.26 301	72	0.73 699	9.99 283	2	37	28
	36	24	9.25 652	69	9.26 372	71	0.73 628	9.99 281	2	36	24
41	40	25	9.25 721	69	9.26 443	71	0.73 557	9.99 278	3	35	20
	44	26	9.25 790	69	9.26 514	71	0.73 486	9.99 276	2	34	16
	48	27	9.25 858	68	9.26 585	71	0.73 415	9.99 274	2	33	12
	52	28	9.25 927	69	9.26 655	70	0.73 345	9.99 271	3	32	8
	56	29	9.25 995	68	9.26 726	71	0.73 274	9.99 269	2	31	4
42	0	30	9.26 063	68	9.26 797	71	0.73 203	9.99 267	2	30	0
	4	31	9.26 131	68	9.26 867	70	0.73 133	9.99 264	3	29	56
	8	32	9.26 199	68	9.26 937	70	0.73 063	9.99 262	2	28	52
	12	33	9.26 267	68	9.27 008	71	0.72 992	9.99 260	2	27	48
	16	34	9.26 335	68	9.27 078	70	0.72 922	9.99 257	3	26	44
42	20	35	9.26 403	68	9.27 148	70	0.72 852	9.99 255	2	25	40
	24	36	9.26 470	67	9.27 218	70	0.72 782	9.99 252	3	24	36
	28	37	9.26 538	68	9.27 288	70	0.72 712	9.99 250	2	23	32
	32	38	9.26 605	67	9.27 357	69	0.72 643	9.99 248	2	22	28
	36	39	9.26 672	67	9.27 427	70	0.72 573	9.99 245	3	21	24
42	40	40	9.26 739	67	9.27 496	69	0.72 504	9.99 243	2	20	20
	44	41	9.26 806	67	9.27 566	70	0.72 434	9.99 241	2	19	16
	48	42	9.26 873	67	9.27 635	69	0.72 365	9.99 238	3	18	12
	52	43	9.26 940	67	9.27 704	69	0.72 296	9.99 236	2	17	8
	56	44	9.27 007	67	9.27 773	69	0.72 227	9.99 233	3	16	4
43	0	45	9.27 073	66	9.27 842	69	0.72 158	9.99 231	2	15	0
	4	46	9.27 140	67	9.27 911	69	0.72 089	9.99 229	2	14	56
	8	47	9.27 206	66	9.27 980	69	0.72 020	9.99 226	3	13	52
	12	48	9.27 273	67	9.28 049	69	0.71 951	9.99 224	2	12	48
	16	49	9.27 339	66	9.28 117	68	0.71 883	9.99 221	3	11	44
43	20	50	9.27 405	66	9.28 186	69	0.71 814	9.99 219	2	10	40
	24	51	9.27 471	66	9.28 254	68	0.71 746	9.99 217	2	9	36
	28	52	9.27 537	66	9.28 323	69	0.71 677	9.99 214	3	8	32
	32	53	9.27 602	65	9.28 391	68	0.71 609	9.99 212	2	7	28
	36	54	9.27 668	66	9.28 459	68	0.71 541	9.99 209	3	6	24
43	40	55	9.27 734	65	9.28 527	68	0.71 473	9.99 207	2	5	20
	44	56	9.27 799	65	9.28 595	68	0.71 405	9.99 204	3	4	16
	48	57	9.27 864	65	9.28 662	67	0.71 338	9.99 202	2	3	12
	52	58	9.27 930	66	9.28 730	68	0.71 270	9.99 200	2	2	8
	56	59	9.27 995	65	9.28 798	68	0.71 202	9.99 197	3	1	4
44	0	60	9.28 060	65	9.28 865	67	0.71 135	9.99 195	2	0	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

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m. s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
44	0	0	9.28 060			0.71 135	9.99 195		60	16 0
	4	1	9.28 125	65	9.28 933	0.71 067	9.99 192	3	59	56
	8	2	9.28 190	65	9.29 000	0.71 000	9.99 190	2	58	52
	12	3	9.28 254	64	9.29 067	0.70 933	9.99 187	3	57	48
	16	4	9.28 319	65	9.29 134	0.70 866	9.99 185	2	56	44
				65				3		
44	20	5	9.28 384		9.29 201	0.70 799	9.99 182		55	15 40
	24	6	9.28 448	64	9.29 268	0.70 732	9.99 180	2	54	36
	28	7	9.28 512	64	9.29 335	0.70 665	9.99 177	3	53	32
	32	8	9.28 577	65	9.29 402	0.70 598	9.99 175	2	52	28
	36	9	9.28 641	64	9.29 468	0.70 532	9.99 172	3	51	24
				64				2		
44	40	10	9.28 705		9.29 535	0.70 465	9.99 170		50	15 20
	44	11	9.28 769	64	9.29 601	0.70 399	9.99 167	3	49	16
	48	12	9.28 833	64	9.29 668	0.70 332	9.99 165	2	48	12
	52	13	9.28 896	63	9.29 734	0.70 266	9.99 162	3	47	8
	56	14	9.28 960	64	9.29 800	0.70 200	9.99 160	2	46	4
				64				3		
45	0	15	9.29 024		9.29 866	0.70 134	9.99 157		45	15 0
	4	16	9.29 087	63	9.29 932	0.70 068	9.99 155	2	44	56
	8	17	9.29 150	63	9.29 998	0.70 002	9.99 152	3	43	52
	12	18	9.29 214	64	9.30 064	0.69 936	9.99 150	2	42	48
	16	19	9.29 277	63	9.30 130	0.69 870	9.99 147	3	41	44
				63				2		
45	20	20	9.29 340		9.30 195	0.69 805	9.99 145		40	14 40
	24	21	9.29 403	63	9.30 261	0.69 739	9.99 142	3	39	36
	28	22	9.29 466	63	9.30 326	0.69 674	9.99 140	2	38	32
	32	23	9.29 529	63	9.30 391	0.69 609	9.99 137	3	37	28
	36	24	9.29 591	62	9.30 457	0.69 543	9.99 135	2	36	24
				63				3		
45	40	25	9.29 654		9.30 522	0.69 478	9.99 132		35	14 20
	44	26	9.29 716	62	9.30 587	0.69 413	9.99 130	2	34	16
	48	27	9.29 779	63	9.30 652	0.69 348	9.99 127	3	33	12
	52	28	9.29 841	62	9.30 717	0.69 283	9.99 124	3	32	8
	56	29	9.29 903	62	9.30 782	0.69 218	9.99 122	2	31	4
				63				3		
46	0	30	9.29 966		9.30 846	0.69 154	9.99 119		30	14 0
	4	31	9.30 028	62	9.30 911	0.69 089	9.99 117	2	29	56
	8	32	9.30 090	62	9.30 975	0.69 025	9.99 114	3	28	52
	12	33	9.30 151	61	9.31 040	0.68 960	9.99 112	2	27	48
	16	34	9.30 213	62	9.31 104	0.68 896	9.99 109	3	26	44
				61				3		
46	20	35	9.30 275		9.31 168	0.68 832	9.99 106		25	13 40
	24	36	9.30 336	61	9.31 233	0.68 767	9.99 104	2	24	36
	28	37	9.30 398	62	9.31 297	0.68 703	9.99 101	3	23	32
	32	38	9.30 459	61	9.31 361	0.68 639	9.99 099	2	22	28
	36	39	9.30 521	62	9.31 425	0.68 575	9.99 096	3	21	24
				61				3		
46	40	40	9.30 582		9.31 489	0.68 511	9.99 093		20	13 20
	44	41	9.30 643	61	9.31 552	0.68 448	9.99 091	2	19	16
	48	42	9.30 704	61	9.31 616	0.68 384	9.99 088	3	18	12
	52	43	9.30 765	61	9.31 679	0.68 321	9.99 086	2	17	8
	56	44	9.30 826	61	9.31 743	0.68 257	9.99 083	3	16	4
				61				3		
47	0	45	9.30 887		9.31 806	0.68 194	9.99 080		15	13 0
	4	46	9.30 947	60	9.31 870	0.68 130	9.99 078	2	14	56
	8	47	9.31 008	61	9.31 933	0.68 067	9.99 075	3	13	52
	12	48	9.31 068	60	9.31 996	0.68 004	9.99 072	3	12	48
	16	49	9.31 129	61	9.32 059	0.67 941	9.99 070	2	11	44
				60				3		
47	20	50	9.31 189		9.32 122	0.67 878	9.99 067		10	12 40
	24	51	9.31 250	61	9.32 185	0.67 815	9.99 064	3	9	36
	28	52	9.31 310	60	9.32 248	0.67 752	9.99 062	2	8	32
	32	53	9.31 370	60	9.32 311	0.67 689	9.99 059	3	7	28
	36	54	9.31 430	60	9.32 373	0.67 627	9.99 056	3	6	24
				60				2		
47	40	55	9.31 490		9.32 436	0.67 564	9.99 054		5	12 20
	44	56	9.31 549	59	9.32 498	0.67 502	9.99 051	3	4	16
	48	57	9.31 609	60	9.32 561	0.67 439	9.99 048	3	3	12
	52	58	9.31 669	60	9.32 623	0.67 377	9.99 046	2	2	8
	56	59	9.31 728	59	9.32 685	0.67 315	9.99 043	3	1	4
				60				3		
48	0	60	9.31 788		9.32 747	0.67 253	9.99 040		0	12 0
			L. Cos.	d.	L. Tang.	c. d.	L. Cotg.	L. Sin.	d.	m. s.

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TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0 <sup>a</sup>			12 <sup>o</sup>								
m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.			
48	0	0	59	9.32 747	63	0.67 253	9.99 040	2	60	12	0
	4	1	60	9.32 810	62	0.67 190	9.99 038	3	59		56
	8	2	59	9.32 872	61	0.67 128	9.99 035	3	58		52
	12	3	59	9.32 933	62	0.67 067	9.99 032	2	57		48
	16	4	59	9.32 995	62	0.67 005	9.99 030	3	56		44
48	20	5	59	9.33 057	62	0.66 943	9.99 027	3	55	11	40
	24	6	59	9.33 119	61	0.66 881	9.99 024	2	54		36
	28	7	59	9.33 180	62	0.66 820	9.99 022	3	53		32
	32	8	58	9.33 242	61	0.66 758	9.99 019	3	52		28
	36	9	59	9.33 303	62	0.66 697	9.99 016	3	51		24
48	40	10	59	9.33 365	61	0.66 635	9.99 013	2	50	11	20
	44	11	58	9.33 426	61	0.66 574	9.99 011	3	49		16
	48	12	58	9.33 487	61	0.66 513	9.99 008	3	48		12
	52	13	59	9.33 548	61	0.66 452	9.99 005	3	47		8
	56	14	58	9.33 609	61	0.66 391	9.99 002	2	46		4
49	0	15	58	9.33 670	61	0.66 330	9.99 000	3	45	11	0
	4	16	58	9.33 731	61	0.66 269	9.98 997	3	44		56
	8	17	58	9.33 792	61	0.66 208	9.98 994	3	43		52
	12	18	58	9.33 853	61	0.66 147	9.98 991	3	42		48
	16	19	58	9.33 913	61	0.66 087	9.98 989	2	41		44
49	20	20	58	9.33 974	60	0.66 026	9.98 986	3	40	10	40
	24	21	57	9.34 034	61	0.65 966	9.98 983	3	39		36
	28	22	58	9.34 095	60	0.65 905	9.98 980	2	38		32
	32	23	57	9.34 155	60	0.65 845	9.98 978	3	37		28
	36	24	58	9.34 215	61	0.65 785	9.98 975	3	36		24
49	40	25	57	9.34 276	60	0.65 724	9.98 972	3	35	10	20
	44	26	57	9.34 336	60	0.65 664	9.98 969	2	34		16
	48	27	58	9.34 396	60	0.65 604	9.98 967	3	33		12
	52	28	57	9.34 456	60	0.65 544	9.98 964	3	32		8
	56	29	57	9.34 516	60	0.65 484	9.98 961	3	31		4
50	0	30	57	9.34 576	59	0.65 424	9.98 958	3	30	10	0
	4	31	56	9.34 635	60	0.65 365	9.98 955	2	29		56
	8	32	57	9.34 695	60	0.65 305	9.98 953	3	28		52
	12	33	57	9.34 755	59	0.65 245	9.98 950	3	27		48
	16	34	57	9.34 814	60	0.65 186	9.98 947	3	26		44
50	20	35	56	9.34 874	59	0.65 126	9.98 944	3	25	9	40
	24	36	57	9.34 933	59	0.65 067	9.98 941	3	24		36
	28	37	56	9.34 992	59	0.65 008	9.98 938	3	23		32
	32	38	56	9.35 051	60	0.64 949	9.98 936	2	22		28
	36	39	57	9.35 111	59	0.64 889	9.98 933	3	21		24
50	40	40	56	9.35 170	59	0.64 830	9.98 930	3	20	9	20
	44	41	56	9.35 229	59	0.64 771	9.98 927	3	19		16
	48	42	56	9.35 288	59	0.64 712	9.98 924	3	18		12
	52	43	56	9.35 347	58	0.64 653	9.98 921	2	17		8
	56	44	56	9.35 405	59	0.64 595	9.98 919	3	16		4
51	0	45	56	9.35 464	59	0.64 536	9.98 916	3	15	9	0
	4	46	55	9.35 523	58	0.64 477	9.98 913	3	14		56
	8	47	56	9.35 581	59	0.64 419	9.98 910	3	13		52
	12	48	55	9.35 640	58	0.64 360	9.98 907	3	12		48
	16	49	56	9.35 698	59	0.64 302	9.98 904	3	11		44
51	20	50	56	9.35 757	58	0.64 243	9.98 901	3	10	8	40
	24	51	56	9.35 815	58	0.64 185	9.98 898	3	9		36
	28	52	55	9.35 873	58	0.64 127	9.98 896	2	8		32
	32	53	55	9.35 931	58	0.64 069	9.98 893	3	7		28
	36	54	55	9.35 989	58	0.64 011	9.98 890	3	6		24
51	40	55	55	9.36 047	58	0.63 953	9.98 887	3	5	8	20
	44	56	55	9.36 105	58	0.63 895	9.98 884	3	4		16
	48	57	55	9.36 163	58	0.63 837	9.98 881	3	3		12
	52	58	55	9.36 221	58	0.63 779	9.98 878	3	2		8
	56	59	55	9.36 279	57	0.63 721	9.98 875	3	1		4
52	0	60		9.36 336		0.63 664	9.98 872		0	8	0
		L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m.	s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°

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m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
52	0	0	9.35 209	54	9.36 336	58	0.63 664	9.98 872	3	60 8 0
	4	1	9.35 263	55	9.36 394	58	0.63 606	9.98 869	3	59 56
	8	2	9.35 318	55	9.36 452	57	0.63 548	9.98 867	3	58 52
	12	3	9.35 373	55	9.36 509	57	0.63 491	9.98 864	3	57 48
	16	4	9.35 427	54	9.36 566	57	0.63 434	9.98 861	3	56 44
52	20	5	9.35 481	55	9.36 624	57	0.63 376	9.98 858	3	55 40
	24	6	9.35 536	54	9.36 681	57	0.63 319	9.98 855	3	54 36
	28	7	9.35 590	54	9.36 738	57	0.63 262	9.98 852	3	53 32
	32	8	9.35 644	54	9.36 795	57	0.63 205	9.98 849	3	52 28
	36	9	9.35 698	54	9.36 852	57	0.63 148	9.98 846	3	51 24
52	40	10	9.35 752	54	9.36 909	57	0.63 091	9.98 843	3	50 20
	44	11	9.35 806	54	9.36 966	57	0.63 034	9.98 840	3	49 16
	48	12	9.35 860	54	9.37 023	57	0.62 977	9.98 837	3	48 12
	52	13	9.35 914	54	9.37 080	57	0.62 920	9.98 834	3	47 8
	56	14	9.35 968	54	9.37 137	56	0.62 863	9.98 831	3	46 4
53	0	15	9.36 022	53	9.37 193	57	0.62 807	9.98 828	3	45 7 0
	4	16	9.36 075	54	9.37 250	56	0.62 750	9.98 825	3	44 56
	8	17	9.36 129	53	9.37 306	57	0.62 694	9.98 822	3	43 52
	12	18	9.36 182	54	9.37 363	56	0.62 637	9.98 819	3	42 48
	16	19	9.36 236	53	9.37 419	57	0.62 581	9.98 816	3	41 44
53	20	20	9.36 289	53	9.37 476	56	0.62 524	9.98 813	3	40 6 40
	24	21	9.36 342	53	9.37 532	56	0.62 468	9.98 810	3	39 36
	28	22	9.36 395	53	9.37 588	56	0.62 412	9.98 807	3	38 32
	32	23	9.36 449	54	9.37 644	56	0.62 356	9.98 804	3	37 28
	36	24	9.36 502	53	9.37 700	56	0.62 300	9.98 801	3	36 24
53	40	25	9.36 555	53	9.37 756	56	0.62 244	9.98 798	3	35 6 20
	44	26	9.36 608	52	9.37 812	56	0.62 188	9.98 795	3	34 16
	48	27	9.36 660	52	9.37 868	56	0.62 132	9.98 792	3	33 12
	52	28	9.36 713	53	9.37 924	56	0.62 076	9.98 789	3	32 8
	56	29	9.36 766	53	9.37 980	55	0.62 020	9.98 786	3	31 4
54	0	30	9.36 819	52	9.38 035	56	0.61 965	9.98 783	3	30 6 0
	4	31	9.36 872	53	9.38 091	56	0.61 909	9.98 780	3	29 56
	8	32	9.36 924	52	9.38 147	55	0.61 853	9.98 777	3	28 52
	12	33	9.36 976	52	9.38 202	55	0.61 798	9.98 774	3	27 48
	16	34	9.37 028	53	9.38 257	56	0.61 743	9.98 771	3	26 44
54	20	35	9.37 081	52	9.38 313	55	0.61 687	9.98 768	3	25 5 40
	24	36	9.37 133	52	9.38 368	55	0.61 632	9.98 765	3	24 36
	28	37	9.37 185	52	9.38 423	56	0.61 577	9.98 762	3	23 32
	32	38	9.37 237	52	9.38 479	55	0.61 521	9.98 759	3	22 28
	36	39	9.37 289	52	9.38 534	55	0.61 466	9.98 756	3	21 24
54	40	40	9.37 341	52	9.38 589	55	0.61 411	9.98 753	3	20 5 20
	44	41	9.37 393	52	9.38 644	55	0.61 356	9.98 750	3	19 16
	48	42	9.37 445	52	9.38 699	55	0.61 301	9.98 746	3	18 12
	52	43	9.37 497	52	9.38 754	55	0.61 246	9.98 743	3	17 8
	56	44	9.37 549	51	9.38 808	55	0.61 192	9.98 740	3	16 4
55	0	45	9.37 600	52	9.38 863	55	0.61 137	9.98 737	3	15 5 0
	4	46	9.37 652	51	9.38 918	54	0.61 082	9.98 734	3	14 56
	8	47	9.37 703	52	9.38 972	55	0.61 028	9.98 731	3	13 52
	12	48	9.37 755	51	9.39 027	55	0.60 973	9.98 728	3	12 48
	16	49	9.37 806	52	9.39 082	54	0.60 918	9.98 725	3	11 44
55	20	50	9.37 858	51	9.39 136	54	0.60 864	9.98 722	3	10 4 40
	24	51	9.37 909	51	9.39 190	55	0.60 810	9.98 719	3	9 36
	28	52	9.37 960	51	9.39 245	54	0.60 755	9.98 715	3	8 32
	32	53	9.38 011	51	9.39 299	54	0.60 701	9.98 712	3	7 28
	36	54	9.38 062	51	9.39 353	54	0.60 647	9.98 709	3	6 24
55	40	55	9.38 113	51	9.39 407	54	0.60 593	9.98 706	3	5 4 20
	44	56	9.38 164	51	9.39 461	54	0.60 539	9.98 703	3	4 16
	48	57	9.38 215	51	9.39 515	54	0.60 485	9.98 700	3	3 12
	52	58	9.38 266	51	9.39 569	54	0.60 431	9.98 697	3	2 8
	56	59	9.38 317	51	9.39 623	54	0.60 377	9.98 694	3	1 4
56	0	60	9.38 368		9.39 677		0.60 323	9.98 690		0 4 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	m. s.

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TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0<sup>h</sup>14<sup>o</sup>

m.	s.		L. Sin.	d.	L. Tang.	e. d.	L. Cotg.	L. Cos.	d.		
56	0	0	9.38 368		9.39 677		0.60 323	9.98 690		60	4 0
	4	1	9.38 418	50	9.39 731	54	0.60 269	9.98 687	3	59	56
	8	2	9.38 469	51	9.39 785	54	0.60 215	9.98 684	3	58	52
	12	3	9.38 519	50	9.39 838	53	0.60 162	9.98 681	3	57	48
	16	4	9.38 570	51	9.39 892	54	0.60 108	9.98 678	3	56	44
				50		53			3		
56	20	5	9.38 620		9.39 945		0.60 055	9.98 675		55	3 40
	24	6	9.38 670	50	9.39 999	54	0.60 001	9.98 671	4	54	36
	28	7	9.38 721	51	9.40 052	53	0.59 948	9.98 668	3	53	32
	32	8	9.38 771	50	9.40 106	54	0.59 894	9.98 665	3	52	28
	36	9	9.38 821	60	9.40 159	53	0.59 841	9.98 662	3	51	24
				50		53			3		
56	40	10	9.38 871		9.40 212		0.59 788	9.98 659		50	3 20
	44	11	9.38 921	50	9.40 266	54	0.59 734	9.98 656	3	49	16
	48	12	9.38 971	50	9.40 319	53	0.59 681	9.98 652	4	48	12
	52	13	9.39 021	50	9.40 372	53	0.59 628	9.98 649	3	47	8
	56	14	9.39 071	60	9.40 425	53	0.59 575	9.98 646	3	46	4
				50		53			3		
57	0	15	9.39 121		9.40 478		0.59 522	9.98 643		45	3 0
	4	16	9.39 170	49	9.40 531	53	0.59 469	9.98 640	3	44	56
	8	17	9.39 220	50	9.40 584	53	0.59 416	9.98 636	4	43	52
	12	18	9.39 270	50	9.40 636	52	0.59 364	9.98 633	3	42	48
	16	19	9.39 319	49	9.40 689	53	0.59 311	9.98 630	3	41	44
				50		53			3		
57	20	20	9.39 369		9.40 742		0.59 258	9.98 627		40	2 40
	24	21	9.39 418	49	9.40 795	53	0.59 205	9.98 623	4	39	36
	28	22	9.39 467	49	9.40 847	52	0.59 153	9.98 620	3	38	32
	32	23	9.39 517	50	9.40 900	53	0.59 100	9.98 617	3	37	28
	36	24	9.39 566	49	9.40 952	52	0.59 048	9.98 614	3	36	24
				49		53			4		
57	40	25	9.39 615		9.41 005		0.58 995	9.98 610		35	2 20
	44	26	9.39 664	49	9.41 057	52	0.58 943	9.98 607	3	34	16
	48	27	9.39 713	49	9.41 109	52	0.58 891	9.98 604	3	33	12
	52	28	9.39 762	49	9.41 161	52	0.58 839	9.98 601	3	32	8
	56	29	9.39 811	49	9.41 214	53	0.58 786	9.98 597	4	31	4
				49		52			3		
58	0	30	9.39 860		9.41 266		0.58 734	9.98 594		30	2 0
	4	31	9.39 909	49	9.41 318	52	0.58 682	9.98 591	3	29	56
	8	32	9.39 958	49	9.41 370	52	0.58 630	9.98 588	3	28	52
	12	33	9.40 006	48	9.41 422	52	0.58 578	9.98 584	4	27	48
	16	34	9.40 055	49	9.41 474	52	0.58 526	9.98 581	3	26	44
				48		52			3		
58	20	35	9.40 103		9.41 526		0.58 474	9.98 578		25	1 40
	24	36	9.40 152	49	9.41 578	52	0.58 422	9.98 574	4	24	36
	28	37	9.40 200	48	9.41 629	51	0.58 371	9.98 571	3	23	32
	32	38	9.40 249	49	9.41 681	52	0.58 319	9.98 568	3	22	28
	36	39	9.40 297	48	9.41 733	52	0.58 267	9.98 565	3	21	24
				49		51			4		
58	40	40	9.40 346		9.41 784		0.58 216	9.98 561		20	1 20
	44	41	9.40 394	48	9.41 836	52	0.58 164	9.98 558	3	19	16
	48	42	9.40 442	48	9.41 887	51	0.58 113	9.98 555	3	18	12
	52	43	9.40 490	48	9.41 939	52	0.58 061	9.98 551	4	17	8
	56	44	9.40 538	48	9.41 990	51	0.58 010	9.98 548	3	16	4
				48		51			3		
59	0	45	9.40 586		9.42 041		0.57 959	9.98 545		15	1 0
	4	46	9.40 634	48	9.42 093	52	0.57 907	9.98 541	4	14	56
	8	47	9.40 682	48	9.42 144	51	0.57 856	9.98 538	3	13	52
	12	48	9.40 730	48	9.42 195	51	0.57 805	9.98 535	3	12	48
	16	49	9.40 778	48	9.42 246	51	0.57 754	9.98 531	4	11	44
				47		51			3		
59	20	50	9.40 825		9.42 297		0.57 703	9.98 528		10	0 40
	24	51	9.40 873	48	9.42 348	51	0.57 652	9.98 525	3	9	36
	28	52	9.40 921	48	9.42 399	51	0.57 601	9.98 521	4	8	32
	32	53	9.40 968	47	9.42 450	51	0.57 550	9.98 518	3	7	28
	36	54	9.41 016	48	9.42 501	51	0.57 499	9.98 515	3	6	24
				47		51			4		
59	40	55	9.41 063		9.42 552		0.57 448	9.98 511		5	0 20
	44	56	9.41 111	48	9.42 603	51	0.57 397	9.98 508	3	4	16
	48	57	9.41 158	47	9.42 653	50	0.57 347	9.98 505	3	3	12
	52	58	9.41 205	47	9.42 704	51	0.57 296	9.98 501	4	2	8
	56	59	9.41 252	47	9.42 755	51	0.57 245	9.98 498	3	1	4
				48		50			4		
60	0	60	9.41 300		9.42 805		0.57 195	9.98 494		0	0 0
			L. Cos.	d.	L. Cotg.	e. d.	L. Tang.	L. Sin.	d.		m. s.

75<sup>o</sup>5<sup>h</sup>

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>			15°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
0	0	0	9.41 300		9.42 805		0.57 195	9.98 494		60	60 0
	4	1	9.41 347	47	9.42 856	51	0.57 144	9.98 491	3	59	56
	8	2	9.41 394	47	9.42 906	50	0.57 094	9.98 488	3	58	52
	12	3	9.41 441	47	9.42 957	51	0.57 043	9.98 484	4	57	48
	16	4	9.41 488	47	9.43 007	50	0.56 993	9.98 481	3	56	44
				47		50			4		
0	20	5	9.41 535		9.43 057		0.56 943	9.98 477		55	59 40
	24	6	9.41 582	47	9.43 108	51	0.56 892	9.98 474	3	54	36
	28	7	9.41 628	46	9.43 158	50	0.56 842	9.98 471	3	53	32
	32	8	9.41 675	47	9.43 208	50	0.56 792	9.98 467	4	52	28
	36	9	9.41 722	47	9.43 258	50	0.56 742	9.98 464	3	51	24
				46		50			4		
0	40	10	9.41 768		9.43 308		0.56 692	9.98 460		50	59 20
	44	11	9.41 815	47	9.43 358	50	0.56 642	9.98 457	3	49	16
	48	12	9.41 861	46	9.43 408	50	0.56 592	9.98 453	4	48	12
	53	13	9.41 908	47	9.43 458	50	0.56 542	9.98 450	3	47	8
	56	14	9.41 954	46	9.43 508	50	0.56 492	9.98 447	3	46	4
				47		50			4		
1	0	15	9.42 001		9.43 558		0.56 442	9.98 443		45	59 0
	4	16	9.42 047	46	9.43 607	49	0.56 393	9.98 440	3	44	56
	8	17	9.42 093	46	9.43 657	50	0.56 343	9.98 436	4	43	52
	12	18	9.42 140	47	9.43 707	50	0.56 293	9.98 433	3	42	48
	16	19	9.42 186	46	9.43 756	49	0.56 244	9.98 429	4	41	44
				46		50			3		
1	20	20	9.42 232		9.43 806		0.56 194	9.98 426		40	58 40
	24	21	9.42 278	46	9.43 855	49	0.56 145	9.98 422	4	39	36
	28	22	9.42 324	46	9.43 905	50	0.56 095	9.98 419	3	38	32
	32	23	9.42 370	46	9.43 954	49	0.56 046	9.98 415	4	37	28
	36	24	9.42 416	46	9.44 004	50	0.55 996	9.98 412	3	36	24
				45		49			3		
1	40	25	9.42 461		9.44 053		0.55 947	9.98 409		35	58 20
	44	26	9.42 507	46	9.44 102	49	0.55 898	9.98 405	4	34	16
	48	27	9.42 553	46	9.44 151	49	0.55 849	9.98 402	3	33	12
	52	28	9.42 599	46	9.44 201	50	0.55 799	9.98 398	4	32	8
	56	29	9.42 644	45	9.44 250	49	0.55 750	9.98 395	3	31	4
				46		49			4		
2	0	30	9.42 690		9.44 299		0.55 701	9.98 391		30	58 0
	4	31	9.42 735	45	9.44 348	49	0.55 652	9.98 388	3	29	56
	8	32	9.42 781	46	9.44 397	49	0.55 603	9.98 384	4	28	52
	12	33	9.42 826	45	9.44 446	49	0.55 554	9.98 381	3	27	48
	16	34	9.42 872	46	9.44 495	49	0.55 505	9.98 377	4	26	44
				45		49			4		
2	20	35	9.42 917		9.44 544		0.55 456	9.98 373		25	57 40
	24	36	9.42 962	45	9.44 592	48	0.55 408	9.98 370	3	24	36
	28	37	9.43 008	46	9.44 641	49	0.55 359	9.98 366	4	23	32
	32	38	9.43 053	45	9.44 690	49	0.55 310	9.98 363	3	22	28
	36	39	9.43 098	45	9.44 738	48	0.55 262	9.98 359	4	21	24
				45		49			3		
2	40	40	9.43 143		9.44 787		0.55 213	9.98 356		20	57 20
	44	41	9.43 188	45	9.44 836	49	0.55 164	9.98 352	4	19	16
	48	42	9.43 233	45	9.44 884	48	0.55 116	9.98 349	3	18	12
	52	43	9.43 278	45	9.44 933	49	0.55 067	9.98 345	4	17	8
	56	44	9.43 323	45	9.44 981	48	0.55 019	9.98 342	3	16	4
				44		48			4		
3	0	45	9.43 367		9.45 029		0.54 971	9.98 338		15	57 0
	4	46	9.43 412	45	9.45 078	49	0.54 922	9.98 334	4	14	56
	8	47	9.43 457	45	9.45 126	48	0.54 874	9.98 331	3	13	52
	12	48	9.43 502	45	9.45 174	48	0.54 826	9.98 327	4	12	48
	16	49	9.43 546	44	9.45 222	48	0.54 778	9.98 324	3	11	44
				45		49			4		
3	20	50	9.43 591		9.45 271		0.54 729	9.98 320		10	56 40
	24	51	9.43 635	44	9.45 319	48	0.54 681	9.98 317	3	9	36
	28	52	9.43 680	45	9.45 367	48	0.54 633	9.98 313	4	8	32
	32	53	9.43 724	44	9.45 415	48	0.54 585	9.98 309	4	7	28
	36	54	9.43 769	45	9.45 463	48	0.54 537	9.98 306	3	6	24
				44		48			4		
3	40	55	9.43 813		9.45 511		0.54 489	9.98 302		5	56 20
	44	56	9.43 857	44	9.45 559	48	0.54 441	9.98 299	3	4	16
	48	57	9.43 901	44	9.45 606	47	0.54 394	9.98 295	4	3	12
	52	58	9.43 946	45	9.45 654	48	0.54 346	9.98 291	4	2	8
	56	59	9.43 990	44	9.45 702	48	0.54 298	9.98 288	3	1	4
				44		48			4		
4	0	60	9.44 034		9.45 750		0.54 250	9.98 284		0	56 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>		16°									
m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.			
4	0	0	9.44 034	44	9.45 750	47	0.54 250	9.98 284	3	60	56 0
4	1	1	9.44 078	44	9.45 797	47	0.54 203	9.98 281	3	59	56
4	2	2	9.44 122	44	9.45 845	48	0.54 155	9.98 277	4	58	52
12	3	3	9.44 166	44	9.45 892	47	0.54 108	9.98 273	4	57	48
16	4	4	9.44 210	44	9.45 940	48	0.54 060	9.98 270	3	56	44
				43		47			4		
4	20	5	9.44 253	44	9.45 987	48	0.54 013	9.98 266	4	55	56 40
24	6	6	9.44 297	44	9.46 035	48	0.53 965	9.98 262	4	54	36
28	7	7	9.44 341	44	9.46 082	47	0.53 918	9.98 259	3	53	32
32	8	8	9.44 385	44	9.46 130	48	0.53 870	9.98 255	4	52	28
36	9	9	9.44 428	43	9.46 177	47	0.53 823	9.98 251	4	51	24
				44		47			3		
4	40	10	9.44 472	44	9.46 224	47	0.53 776	9.98 248	4	50	55 20
44	11	11	9.44 516	44	9.46 271	47	0.53 729	9.98 244	4	49	16
48	12	12	9.44 559	43	9.46 319	48	0.53 681	9.98 240	4	48	12
52	13	13	9.44 602	43	9.46 366	47	0.53 634	9.98 237	3	47	8
56	14	14	9.44 646	44	9.46 413	47	0.53 587	9.98 233	4	46	4
				43		47			4		
5	0	15	9.44 689	44	9.46 460	47	0.53 540	9.98 229	3	45	55 0
4	16	16	9.44 733	43	9.46 507	47	0.53 493	9.98 226	4	44	56
8	17	17	9.44 776	43	9.46 554	47	0.53 446	9.98 222	4	43	52
12	18	18	9.44 819	43	9.46 601	47	0.53 399	9.98 218	4	42	48
16	19	19	9.44 862	43	9.46 648	46	0.53 352	9.98 215	3	41	44
				43		46			4		
5	20	20	9.44 905	43	9.46 694	47	0.53 306	9.98 211	3	40	54 40
24	21	21	9.44 948	43	9.46 741	47	0.53 259	9.98 207	4	39	36
28	22	22	9.44 992	44	9.46 788	47	0.53 212	9.98 204	3	38	32
32	23	23	9.45 035	43	9.46 835	47	0.53 165	9.98 200	4	37	28
36	24	24	9.45 077	42	9.46 881	46	0.53 119	9.98 196	4	36	24
				43		47			4		
5	40	25	9.45 120	43	9.46 928	47	0.53 072	9.98 192	3	35	54 20
44	26	26	9.45 163	43	9.46 975	47	0.53 025	9.98 189	4	34	16
48	27	27	9.45 206	43	9.47 021	46	0.52 979	9.98 185	4	33	12
52	28	28	9.45 249	43	9.47 068	47	0.52 932	9.98 181	4	32	8
56	29	29	9.45 292	43	9.47 114	46	0.52 886	9.98 177	4	31	4
				42		46			3		
6	0	30	9.45 334	43	9.47 160	47	0.52 840	9.98 174	4	30	54 0
4	31	31	9.45 377	43	9.47 207	47	0.52 793	9.98 170	4	29	56
8	32	32	9.45 419	42	9.47 253	46	0.52 747	9.98 166	4	28	52
12	33	33	9.45 462	43	9.47 299	46	0.52 701	9.98 162	4	27	48
16	34	34	9.45 504	42	9.47 346	47	0.52 654	9.98 159	3	26	44
				43		46			4		
6	20	35	9.45 547	42	9.47 392	46	0.52 608	9.98 155	4	25	58 40
24	36	36	9.45 589	42	9.47 438	46	0.52 562	9.98 151	4	24	36
28	37	37	9.45 632	43	9.47 484	46	0.52 516	9.98 147	4	23	32
32	38	38	9.45 674	42	9.47 530	46	0.52 470	9.98 144	3	22	28
36	39	39	9.45 716	42	9.47 576	46	0.52 424	9.98 140	4	21	24
				42		46			4		
6	40	40	9.45 758	43	9.47 622	46	0.52 378	9.98 136	4	20	58 20
44	41	41	9.45 801	42	9.47 668	46	0.52 332	9.98 132	4	19	16
48	42	42	9.45 843	42	9.47 714	46	0.52 286	9.98 129	3	18	12
52	43	43	9.45 885	42	9.47 760	46	0.52 240	9.98 125	4	17	8
56	44	44	9.45 927	42	9.47 806	46	0.52 194	9.98 121	4	16	4
				42		46			4		
7	0	45	9.45 969	42	9.47 852	45	0.52 148	9.98 117	4	15	58 0
4	46	46	9.46 011	42	9.47 897	45	0.52 103	9.98 113	4	14	56
8	47	47	9.46 053	42	9.47 943	46	0.52 057	9.98 110	3	13	52
12	48	48	9.46 095	42	9.47 989	46	0.52 011	9.98 106	4	12	48
16	49	49	9.46 136	41	9.48 035	45	0.51 965	9.98 102	4	11	44
				42		45			4		
7	20	50	9.46 178	42	9.48 080	46	0.51 920	9.98 098	4	10	52 40
24	51	51	9.46 220	42	9.48 126	46	0.51 874	9.98 094	4	9	36
28	52	52	9.46 262	42	9.48 171	45	0.51 829	9.98 090	4	8	32
32	53	53	9.46 303	41	9.48 217	46	0.51 783	9.98 087	3	7	28
36	54	54	9.46 345	42	9.48 262	45	0.51 738	9.98 083	4	6	24
				41		45			4		
7	40	55	9.46 386	42	9.48 307	46	0.51 693	9.98 079	4	5	52 20
44	56	56	9.46 428	42	9.48 353	46	0.51 647	9.98 075	4	4	16
48	57	57	9.46 469	41	9.48 398	45	0.51 602	9.98 071	4	3	12
52	58	58	9.46 511	42	9.48 443	45	0.51 557	9.98 067	4	2	8
56	59	59	9.46 552	41	9.48 489	46	0.51 511	9.98 063	4	1	4
				42		45			3		
8	0	60	9.46 594	42	9.48 534	45	0.51 466	9.98 060	3	0	52 0
		L. Cos	d.	L. Cotg.	c. d.	L. Tang	L. Sin.	d.		m.	s.

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4<sup>h</sup>

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1<sup>h</sup>

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m. s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
8 0	0	9.46 594	*	9.48 534		0.51 466	9.98 060		60	52 0
4	1	9.46 635	41	9.48 579	45	0.51 421	9.98 056	4	59	56
8	2	9.46 676	41	9.48 624	45	0.51 376	9.98 052	4	58	52
12	3	9.46 717	41	9.48 669	45	0.51 331	9.98 048	4	57	48
16	4	9.46 758	41	9.48 714	45	0.51 286	9.98 044	4	56	44
8 20	5	9.46 800		9.48 759		0.51 241	9.98 040		55	51 40
24	6	9.46 841	41	9.48 804	45	0.51 196	9.98 036	4	54	36
28	7	9.46 882	41	9.48 849	45	0.51 151	9.98 032	4	53	32
32	8	9.46 923	41	9.48 894	45	0.51 106	9.98 029	3	52	28
36	9	9.46 964	41	9.48 939	45	0.51 061	9.98 025	4	51	24
8 40	10	9.47 005		9.48 984		0.51 016	9.98 021		50	51 20
44	11	9.47 045	40	9.49 029	45	0.50 971	9.98 017	4	49	16
48	12	9.47 086	41	9.49 073	44	0.50 927	9.98 013	4	48	12
52	13	9.47 127	41	9.49 118	45	0.50 882	9.98 009	4	47	8
56	14	9.47 168	41	9.49 163	45	0.50 837	9.98 005	4	46	4
9 0	15	9.47 209		9.49 207		0.50 793	9.98 001		45	51 0
4	16	9.47 249	40	9.49 252	45	0.50 748	9.97 997	4	44	56
8	17	9.47 290	41	9.49 296	44	0.50 704	9.97 993	4	43	52
12	18	9.47 330	40	9.49 341	45	0.50 659	9.97 989	4	42	48
16	19	9.47 371	41	9.49 385	44	0.50 615	9.97 986	3	41	44
9 20	20	9.47 411	40	9.49 430	45	0.50 570	9.97 982	4	40	50 40
24	21	9.47 452	41	9.49 474	44	0.50 525	9.97 978	4	39	36
28	22	9.47 492	40	9.49 519	45	0.50 481	9.97 974	4	38	32
32	23	9.47 533	41	9.49 563	44	0.50 437	9.97 970	4	37	28
36	24	9.47 573	40	9.49 607	45	0.50 393	9.97 966	4	36	24
9 40	25	9.47 613		9.49 652		0.50 348	9.97 962		35	50 20
44	26	9.47 654	41	9.49 696	44	0.50 304	9.97 958	4	34	16
48	27	9.47 694	40	9.49 740	45	0.50 260	9.97 954	4	33	12
52	28	9.47 734	40	9.49 784	44	0.50 216	9.97 950	4	32	8
56	29	9.47 774	40	9.49 828	44	0.50 172	9.97 946	4	31	4
10 0	30	9.47 814	40	9.49 872	44	0.50 128	9.97 942	4	30	50 0
4	31	9.47 854	40	9.49 916	44	0.50 084	9.97 938	4	29	56
8	32	9.47 894	40	9.49 960	44	0.50 040	9.97 934	4	28	52
12	33	9.47 934	40	9.50 004	44	0.49 996	9.97 930	4	27	48
16	34	9.47 974	40	9.50 048	44	0.49 952	9.97 926	4	26	44
10 20	35	9.48 014		9.50 092		0.49 908	9.97 922		25	49 40
24	36	9.48 054	40	9.50 136	44	0.49 864	9.97 918	4	24	36
28	37	9.48 094	40	9.50 180	44	0.49 820	9.97 914	4	23	32
32	38	9.48 133	39	9.50 223	43	0.49 777	9.97 910	4	22	28
36	39	9.48 173	40	9.50 267	44	0.49 733	9.97 906	4	21	24
10 40	40	9.48 213		9.50 311		0.49 689	9.97 902		20	49 20
44	41	9.48 252	40	9.50 355	44	0.49 645	9.97 898	4	19	16
48	42	9.48 292	40	9.50 398	44	0.49 602	9.97 894	4	18	12
52	43	9.48 332	39	9.50 442	43	0.49 558	9.97 890	4	17	8
56	44	9.48 371	40	9.50 485	44	0.49 515	9.97 886	4	16	4
11 0	45	9.48 411		9.50 529		0.49 471	9.97 882		15	49 0
4	46	9.48 450	39	9.50 572	44	0.49 428	9.97 878	4	14	56
8	47	9.48 490	40	9.50 616	44	0.49 384	9.97 874	4	13	52
12	48	9.48 529	39	9.50 659	43	0.49 341	9.97 870	4	12	48
16	49	9.48 568	39	9.50 703	41	0.49 297	9.97 866	4	11	44
11 20	50	9.48 607		9.50 746		0.49 254	9.97 861		10	48 40
24	51	9.48 647	40	9.50 789	43	0.49 211	9.97 857	4	9	36
28	52	9.48 686	39	9.50 833	44	0.49 167	9.97 853	4	8	32
32	53	9.48 725	39	9.50 876	43	0.49 124	9.97 849	4	7	28
36	54	9.48 764	39	9.50 919	43	0.49 081	9.97 845	4	6	24
11 40	55	9.48 803		9.50 962		0.49 038	9.97 841		5	48 20
44	56	9.48 842	39	9.51 005	43	0.48 995	9.97 837	4	4	16
48	57	9.48 881	39	9.51 048	43	0.48 952	9.97 833	4	3	12
52	58	9.48 920	39	9.51 092	44	0.48 908	9.97 829	4	2	8
56	59	9.48 959	39	9.51 135	43	0.48 865	9.97 825	4	1	4
12 0	60	9.48 998		9.51 178		0.48 822	9.97 821		0	48 0
		L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

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TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>				18°							
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
12	0	0	9.48 998		9.51 178		0.48 822	9.97 821		60	48 0
	4	1	9.49 037	39	9.51 221	43	0.48 779	9.97 817	4	59	56
	8	2	9.49 076	39	9.51 264	43	0.48 736	9.97 812	5	58	52
	12	3	9.49 115	39	9.51 306	42	0.48 694	9.97 808	4	57	48
	16	4	9.49 153	38	9.51 349	43	0.48 651	9.97 804	4	56	44
				39					4		
12	20	5	9.49 192		9.51 392		0.48 608	9.97 800		55	47 40
	24	6	9.49 231	39	9.51 435	43	0.48 565	9.97 796	4	54	36
	28	7	9.49 269	38	9.51 478	43	0.48 522	9.97 792	4	53	32
	32	8	9.49 308	39	9.51 520	42	0.48 480	9.97 788	4	52	28
	36	9	9.49 347	39	9.51 563	43	0.48 437	9.97 784	4	51	24
				38					5		
12	40	10	9.49 385		9.51 606		0.48 394	9.97 779		50	47 20
	44	11	9.49 424	39	9.51 648	42	0.48 352	9.97 775	4	49	16
	48	12	9.49 462	38	9.51 691	43	0.48 309	9.97 771	4	48	12
	52	13	9.49 500	39	9.51 734	42	0.48 266	9.97 767	4	47	8
	56	14	9.49 539	38	9.51 776	43	0.48 224	9.97 763	4	46	4
				38					4		
13	0	15	9.49 577		9.51 819		0.48 181	9.97 759		45	47 0
	4	16	9.49 615	39	9.51 861	42	0.48 139	9.97 754	5	44	56
	8	17	9.49 654	39	9.51 903	42	0.48 097	9.97 750	4	43	52
	12	18	9.49 692	38	9.51 946	43	0.48 054	9.97 746	4	42	48
	16	19	9.49 730	38	9.51 988	42	0.48 012	9.97 742	4	41	44
				38					4		
13	20	20	9.49 768		9.52 031		0.47 969	9.97 738		40	46 40
	24	21	9.49 806	38	9.52 073	42	0.47 927	9.97 734	4	39	36
	28	22	9.49 844	38	9.52 115	42	0.47 885	9.97 729	5	38	32
	32	23	9.49 882	38	9.52 157	42	0.47 843	9.97 725	4	37	28
	36	24	9.49 920	38	9.52 200	43	0.47 800	9.97 721	4	36	24
				38					4		
13	40	25	9.49 958		9.52 242		0.47 758	9.97 717		35	46 20
	44	26	9.49 996	38	9.52 284	42	0.47 716	9.97 713	4	34	16
	48	27	9.50 034	38	9.52 326	42	0.47 674	9.97 708	5	33	12
	52	28	9.50 072	38	9.52 368	42	0.47 632	9.97 704	4	32	8
	56	29	9.50 110	38	9.52 410	42	0.47 590	9.97 700	4	31	4
				38					4		
14	0	30	9.50 148		9.52 452		0.47 548	9.97 696		30	46 0
	4	31	9.50 185	37	9.52 494	42	0.47 506	9.97 691	5	29	56
	8	32	9.50 223	38	9.52 536	42	0.47 464	9.97 687	4	28	52
	12	33	9.50 261	38	9.52 578	42	0.47 422	9.97 683	4	27	48
	16	34	9.50 298	37	9.52 620	41	0.47 380	9.97 679	5	26	44
				37					5		
14	20	35	9.50 336		9.52 661		0.47 339	9.97 674		25	45 40
	24	36	9.50 374	38	9.52 703	42	0.47 297	9.97 670	4	24	36
	28	37	9.50 411	37	9.52 745	42	0.47 255	9.97 666	4	23	32
	32	38	9.50 449	38	9.52 787	42	0.47 213	9.97 662	4	22	28
	36	39	9.50 486	37	9.52 829	41	0.47 171	9.97 657	5	21	24
				37					4		
14	40	40	9.50 523		9.52 870		0.47 130	9.97 653		20	45 20
	44	41	9.50 561	38	9.52 912	42	0.47 088	9.97 649	4	19	16
	48	42	9.50 598	37	9.52 953	41	0.47 047	9.97 645	4	18	12
	52	43	9.50 635	37	9.52 995	42	0.47 005	9.97 640	5	17	8
	56	44	9.50 673	38	9.53 037	41	0.46 963	9.97 636	4	16	4
				37					4		
15	0	45	9.50 710		9.53 078		0.46 922	9.97 632		15	45 0
	4	46	9.50 747	37	9.53 120	42	0.46 880	9.97 628	4	14	56
	8	47	9.50 784	37	9.53 161	41	0.46 839	9.97 623	5	13	52
	12	48	9.50 821	37	9.53 202	41	0.46 798	9.97 619	4	12	48
	16	49	9.50 858	37	9.53 244	42	0.46 756	9.97 615	4	11	44
				38					5		
15	20	50	9.50 896		9.53 285		0.46 715	9.97 610		10	44 40
	24	51	9.50 933	37	9.53 327	42	0.46 673	9.97 606	4	9	36
	28	52	9.50 970	37	9.53 368	41	0.46 632	9.97 602	5	8	32
	32	53	9.51 007	37	9.53 409	41	0.46 591	9.97 597	4	7	28
	36	54	9.51 043	36	9.53 450	42	0.46 550	9.97 593	4	6	24
				37					4		
15	40	55	9.51 080		9.53 492		0.46 508	9.97 589		5	44 20
	44	56	9.51 117	37	9.53 533	41	0.46 467	9.97 584	4	4	16
	48	57	9.51 154	37	9.53 5 4	41	0.46 426	9.97 580	4	3	12
	52	58	9.51 191	37	9.53 615	41	0.46 385	9.97 576	4	2	8
	56	59	9.51 227	36	9.53 656	41	0.46 344	9.97 571	5	1	4
				37					4		
16	0	60	9.51 264		9.53 697		0.46 303	9.97 567		0	44 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>		19°											
m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.					
16	0	0	9.51 264	37	9.53 697	41	0.46 303	9.97 567	4	60	44	0	
	4	1	9.51 301	37	9.53 738	41	0.46 262	9.97 563	5	59		56	
	8	2	9.51 338	36	9.53 779	41	0.46 221	9.97 558	4	58		52	
	12	3	9.51 374	37	9.53 820	41	0.46 180	9.97 554	5	57		48	
	16	4	9.51 411	36	9.53 861	41	0.46 139	9.97 550	5	56		44	
16	20	5	9.51 447	37	9.53 902	41	0.46 098	9.97 546	4	55	43	40	
	24	6	9.51 484	36	9.53 943	41	0.46 057	9.97 541	5	54		36	
	28	7	9.51 520	37	9.53 984	41	0.46 016	9.97 536	4	53		32	
	32	8	9.51 557	36	9.54 025	40	0.45 975	9.97 532	5	52		28	
	36	9	9.51 593	36	9.54 066	41	0.45 935	9.97 528	5	51		24	
16	40	10	9.51 629	37	9.54 106	41	0.45 894	9.97 523	4	50	43	20	
	44	11	9.51 666	36	9.54 147	40	0.45 853	9.97 519	5	49		16	
	48	12	9.51 702	36	9.54 187	41	0.45 813	9.97 515	4	48		12	
	52	13	9.51 738	36	9.54 228	41	0.45 772	9.97 510	5	47		8	
	56	14	9.51 774	37	9.54 269	41	0.45 731	9.97 506	5	46		4	
17	0	15	9.51 811	36	9.54 309	41	0.45 691	9.97 501	4	45	43	0	
	4	16	9.51 847	36	9.54 350	40	0.45 650	9.97 497	5	44		56	
	8	17	9.51 883	36	9.54 390	41	0.45 610	9.97 492	4	43		52	
	12	18	9.51 919	36	9.54 431	40	0.45 569	9.97 488	5	42		48	
	16	19	9.51 955	36	9.54 471	41	0.45 529	9.97 484	5	41		44	
17	20	20	9.51 991	36	9.54 512	40	0.45 488	9.97 479	4	40	42	40	
	24	21	9.52 027	36	9.54 552	41	0.45 448	9.97 475	5	39		36	
	28	22	9.52 063	36	9.54 593	40	0.45 407	9.97 470	4	38		32	
	32	23	9.52 099	36	9.54 633	40	0.45 367	9.97 466	5	37		28	
	36	24	9.52 135	36	9.54 673	41	0.45 327	9.97 461	4	36		24	
17	40	25	9.52 171	36	9.54 714	40	0.45 286	9.97 457	5	35	42	20	
	44	26	9.52 207	35	9.54 754	40	0.45 246	9.97 453	4	34		16	
	48	27	9.52 242	36	9.54 794	41	0.45 206	9.97 448	5	33		12	
	52	28	9.52 278	36	9.54 835	40	0.45 165	9.97 444	4	32		8	
	56	29	9.52 314	36	9.54 875	40	0.45 125	9.97 439	4	31		4	
18	0	30	9.52 350	35	9.54 915	40	0.45 085	9.97 435	5	30	42	0	
	4	31	9.52 385	36	9.54 955	40	0.45 045	9.97 430	4	29		56	
	8	32	9.52 421	35	9.54 995	40	0.45 005	9.97 426	5	28		52	
	12	33	9.52 456	36	9.55 035	40	0.44 965	9.97 421	4	27		48	
	16	34	9.52 492	35	9.55 075	40	0.44 925	9.97 417	5	26		44	
18	20	35	9.52 527	36	9.55 115	40	0.44 885	9.97 412	4	25	41	40	
	24	36	9.52 563	35	9.55 155	40	0.44 845	9.97 408	5	24		36	
	28	37	9.52 598	36	9.55 195	40	0.44 805	9.97 403	4	23		32	
	32	38	9.52 634	35	9.55 235	40	0.44 765	9.97 399	5	22		28	
	36	39	9.52 669	36	9.55 275	40	0.44 725	9.97 394	4	21		24	
18	40	40	9.52 705	35	9.55 315	40	0.44 685	9.97 390	5	20	41	20	
	44	41	9.52 740	36	9.55 355	40	0.44 645	9.97 385	4	19		16	
	48	42	9.52 775	36	9.55 395	39	0.44 605	9.97 381	5	18		12	
	52	43	9.52 811	35	9.55 434	40	0.44 566	9.97 376	4	17		8	
	56	44	9.52 846	35	9.55 474	40	0.44 526	9.97 372	5	16		4	
19	0	45	9.52 881	35	9.55 514	40	0.44 486	9.97 367	4	15	41	0	
	4	46	9.52 916	35	9.55 554	39	0.44 446	9.97 363	5	14		56	
	8	47	9.52 951	35	9.55 593	40	0.44 407	9.97 358	4	13		52	
	12	48	9.52 986	35	9.55 633	40	0.44 367	9.97 353	5	12		48	
	16	49	9.53 021	35	9.55 673	39	0.44 327	9.97 349	4	11		44	
19	20	50	9.53 056	36	9.55 712	40	0.44 288	9.97 344	4	10	40	40	
	24	51	9.53 092	34	9.55 752	39	0.44 248	9.97 340	5	9		36	
	28	52	9.53 126	35	9.55 791	40	0.44 209	9.97 335	4	8		32	
	32	53	9.53 161	35	9.55 831	39	0.44 169	9.97 331	5	7		28	
	36	54	9.53 196	35	9.55 870	40	0.44 130	9.97 326	4	6		24	
19	40	55	9.53 231	35	9.55 910	39	0.44 090	9.97 322	5	5	40	20	
	44	56	9.53 266	35	9.55 949	40	0.44 051	9.97 317	4	4		16	
	48	57	9.53 301	35	9.55 989	39	0.44 011	9.97 312	5	3		12	
	52	58	9.53 336	34	9.56 028	39	0.43 972	9.97 308	4	2		8	
	56	59	9.53 370	35	9.56 067	40	0.43 933	9.97 303	5	1		4	
20	0	60	9.53 405		9.56 107		0.43 893	9.97 299	4	0	40	0	
		L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.			m.	s.	



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>				20°									
m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.					
20	0	0	9.53 406										
4	1	9.53 440	35	9.56 107	39	0.43 893	9.97 299	5	60	40	0		
8	2	9.53 475	35	9.56 146	39	0.43 854	9.97 294	5	59		56		
12	3	9.53 509	34	9.56 185	39	0.43 815	9.97 289	5	58		52		
16	4	9.53 544	35	9.56 224	40	0.43 776	9.97 285	5	57		48		
			34	9.56 264	39	0.43 736	9.97 280	4	56		44		
20	20	5	9.53 578										
24	6	9.53 613	35	9.56 303	39	0.43 697	9.97 276	5	55	39	40		
28	7	9.53 647	34	9.56 342	39	0.43 658	9.97 271	5	54		36		
32	8	9.53 682	35	9.56 381	39	0.43 619	9.97 266	5	53		32		
36	9	9.53 716	34	9.56 420	39	0.43 580	9.97 262	4	52		28		
			35	9.56 459	39	0.43 541	9.97 257	5	51		24		
20	40	10	9.53 751										
44	11	9.53 786	34	9.56 498	39	0.43 502	9.97 252	4	50	39	20		
48	12	9.53 819	34	9.56 537	39	0.43 463	9.97 248	4	49		16		
52	13	9.53 854	35	9.56 576	39	0.43 424	9.97 243	5	48		12		
56	14	9.53 888	34	9.56 615	39	0.43 385	9.97 238	5	47		8		
			34	9.56 654	39	0.43 346	9.97 234	4	46		4		
21	0	15	9.53 922										
4	16	9.53 957	35	9.56 693	39	0.43 307	9.97 229	5	45	39	0		
8	17	9.53 991	34	9.56 732	39	0.43 268	9.97 224	4	44		56		
12	18	9.54 025	34	9.56 771	39	0.43 229	9.97 220	5	43		52		
16	19	9.54 059	34	9.56 810	39	0.43 190	9.97 215	5	42		48		
			34	9.56 849	38	0.43 151	9.97 210	4	41		44		
21	20	20	9.54 093										
24	21	9.54 127	34	9.56 887	39	0.43 113	9.97 206	5	40	38	40		
28	22	9.54 161	34	9.56 926	39	0.43 074	9.97 201	5	39		36		
32	23	9.54 195	34	9.56 965	39	0.43 035	9.97 196	5	38		32		
36	24	9.54 229	34	9.57 004	38	0.42 996	9.97 192	4	37		28		
			34	9.57 042	39	0.42 958	9.97 187	5	36		24		
21	40	25	9.54 263										
44	26	9.54 297	34	9.57 081	39	0.42 919	9.97 182	4	35	38	20		
48	27	9.54 331	34	9.57 120	38	0.42 880	9.97 178	5	34		16		
52	28	9.54 365	34	9.57 158	39	0.42 842	9.97 173	5	33		12		
56	29	9.54 399	34	9.57 197	38	0.42 803	9.97 168	5	32		8		
			34	9.57 235	39	0.42 765	9.97 163	4	31		4		
22	0	30	9.54 433										
4	31	9.54 466	33	9.57 274	38	0.42 726	9.97 159	5	30	38	0		
8	32	9.54 500	34	9.57 312	39	0.42 688	9.97 154	5	29		56		
12	33	9.54 534	34	9.57 351	38	0.42 649	9.97 149	5	28		52		
16	34	9.54 567	33	9.57 389	39	0.42 611	9.97 145	4	27		48		
			34	9.57 428	38	0.42 572	9.97 140	5	26		44		
22	20	35	9.54 601										
24	36	9.54 635	34	9.57 466	38	0.42 534	9.97 135	5	25	37	40		
28	37	9.54 668	33	9.57 504	39	0.42 496	9.97 130	4	24		36		
32	38	9.54 702	34	9.57 543	38	0.42 457	9.97 126	5	23		32		
36	39	9.54 735	34	9.57 581	38	0.42 419	9.97 121	5	22		28		
			34	9.57 619	39	0.42 381	9.97 116	5	21		24		
22	40	40	9.54 769										
44	41	9.54 802	33	9.57 658	38	0.42 342	9.97 111	4	20	37	20		
48	42	9.54 836	34	9.57 696	38	0.42 304	9.97 107	5	19		16		
52	43	9.54 869	33	9.57 734	38	0.42 266	9.97 102	5	18		12		
56	44	9.54 903	34	9.57 772	38	0.42 228	9.97 097	5	17		8		
			33	9.57 810	39	0.42 190	9.97 092	5	16		4		
23	0	45	9.54 936										
4	46	9.54 969	33	9.57 849	38	0.42 151	9.97 087	4	15	37	0		
8	47	9.55 003	34	9.57 887	38	0.42 113	9.97 083	5	14		56		
12	48	9.55 036	33	9.57 925	38	0.42 075	9.97 078	5	13		52		
16	49	9.55 069	33	9.57 963	38	0.42 037	9.97 073	5	12		48		
			33	9.58 001	38	0.41 999	9.97 068	5	11		44		
23	20	50	9.55 102										
24	51	9.55 136	34	9.58 039	38	0.41 961	9.97 063	4	10	36	40		
28	52	9.55 169	33	9.58 077	38	0.41 923	9.97 059	5	9		36		
32	53	9.55 202	33	9.58 115	38	0.41 885	9.97 054	5	8		32		
36	54	9.55 235	33	9.58 153	38	0.41 847	9.97 049	5	7		28		
			33	9.58 191	38	0.41 809	9.97 044	5	6		24		
23	40	55	9.55 268										
44	56	9.55 301	33	9.58 229	38	0.41 771	9.97 039	4	5	36	20		
48	57	9.55 334	33	9.58 267	37	0.41 733	9.97 035	5	4		16		
52	58	9.55 367	33	9.58 304	38	0.41 696	9.97 030	5	3		12		
56	59	9.55 400	33	9.58 342	38	0.41 658	9.97 025	5	2		8		
			33	9.58 380	38	0.41 620	9.97 020	5	1		4		
24	0	60	9.55 433										
				9.58 418	38	0.41 582	9.97 015	5	0	36	0		
		L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.			m.	s.	



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1<sup>h</sup>

21°

m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.				
24	0	0	9.55 433		9.58 418		0.41 582	9.97 015		60	36	0	
	4	1	9.55 466	33	9.58 455	37	0.41 545	9.97 010	5	59	56	52	
	8	2	9.55 499	33	9.58 493	38	0.41 507	9.97 005	5	58	52	48	
	12	3	9.55 532	33	9.58 531	38	0.41 469	9.97 001	5	57	48	44	
	16	4	9.55 564	32	9.58 569	38	0.41 431	9.96 996	5	56	44	40	
				33		37			5				
24	20	5	9.55 597		9.58 606		0.41 394	9.96 991		55	35	40	
	24	6	9.55 630	33	9.58 644	38	0.41 356	9.96 986	5	54	36	36	
	28	7	9.55 663	33	9.58 681	37	0.41 319	9.96 981	5	53	32	32	
	32	8	9.55 696	32	9.58 719	38	0.41 281	9.96 976	5	52	28	28	
	36	9	9.55 728	33	9.58 757	38	0.41 243	9.96 971	5	51	24	24	
				33		37			5				
24	40	10	9.55 761		9.58 794		0.41 206	9.96 966		50	35	20	
	44	11	9.55 793	32	9.58 832	38	0.41 168	9.96 962	4	49	16	16	
	48	12	9.55 826	33	9.58 869	37	0.41 131	9.96 957	4	48	12	12	
	52	13	9.55 858	32	9.58 907	38	0.41 093	9.96 952	4	47	8	8	
	56	14	9.55 891	33	9.58 944	37	0.41 056	9.96 947	4	46	4	4	
				32		37			4				
25	0	15	9.55 923		9.58 981		0.41 019	9.96 942		45	35	0	
	4	16	9.55 956	33	9.59 019	38	0.40 981	9.96 937	5	44	56	56	
	8	17	9.55 988	32	9.59 056	37	0.40 944	9.96 932	5	43	52	52	
	12	18	9.56 021	33	9.59 094	38	0.40 906	9.96 927	5	42	48	48	
	16	19	9.56 053	32	9.59 131	37	0.40 869	9.96 922	5	41	44	44	
				32		37			5				
25	20	20	9.56 085		9.59 168		0.40 832	9.96 917		40	34	40	
	24	21	9.56 118	33	9.59 206	37	0.40 795	9.96 912	5	39	36	36	
	28	22	9.56 150	32	9.59 243	38	0.40 757	9.96 907	5	38	32	32	
	32	23	9.56 182	32	9.59 280	37	0.40 720	9.96 903	4	37	28	28	
	36	24	9.56 215	33	9.59 317	37	0.40 683	9.96 898	5	36	24	24	
				32		37			5				
25	40	25	9.56 247		9.59 354		0.40 646	9.96 893		35	34	20	
	44	26	9.56 279	32	9.59 391	37	0.40 609	9.96 888	5	34	16	16	
	48	27	9.56 311	32	9.59 429	38	0.40 571	9.96 883	5	33	12	12	
	52	28	9.56 343	32	9.59 466	37	0.40 534	9.96 878	5	32	8	8	
	56	29	9.56 375	32	9.59 503	37	0.40 497	9.96 873	5	31	4	4	
				33		37			5				
26	0	30	9.56 408		9.59 540		0.40 460	9.96 868		30	34	0	
	4	31	9.56 440	32	9.59 577	37	0.40 423	9.96 863	5	29	56	56	
	8	32	9.56 472	32	9.59 614	37	0.40 386	9.96 858	5	28	52	52	
	12	33	9.56 504	32	9.59 651	37	0.40 349	9.96 853	5	27	48	48	
	16	34	9.56 536	32	9.59 688	37	0.40 312	9.96 848	5	26	44	44	
				32		37			5				
26	20	35	9.56 568		9.59 725		0.40 275	9.96 843		25	33	40	
	24	36	9.56 599	31	9.59 762	37	0.40 238	9.96 838	5	24	36	36	
	28	37	9.56 631	32	9.59 799	37	0.40 201	9.96 833	5	23	32	32	
	32	38	9.56 663	32	9.59 836	36	0.40 165	9.96 828	5	22	28	28	
	36	39	9.56 695	32	9.59 872	37	0.40 128	9.96 823	5	21	24	24	
				32		37			5				
26	40	40	9.56 727		9.59 909		0.40 091	9.96 818		20	33	20	
	44	41	9.56 759	32	9.59 946	37	0.40 054	9.96 813	5	19	16	16	
	48	42	9.56 790	31	9.59 983	37	0.40 017	9.96 808	5	18	12	12	
	52	43	9.56 822	32	9.60 019	36	0.39 981	9.96 803	5	17	8	8	
	56	44	9.56 854	32	9.60 056	37	0.39 944	9.96 798	5	16	4	4	
				32		37			5				
27	0	45	9.56 886		9.60 093		0.39 907	9.96 793		15	33	0	
	4	46	9.56 917	31	9.60 130	37	0.39 870	9.96 788	5	14	56	56	
	8	47	9.56 949	32	9.60 166	36	0.39 834	9.96 783	5	13	52	52	
	12	48	9.56 980	31	9.60 203	37	0.39 797	9.96 778	5	12	48	48	
	16	49	9.57 012	32	9.60 240	37	0.39 760	9.96 772	6	11	44	44	
				32		36			5				
27	20	50	9.57 044		9.60 276		0.39 724	9.96 767		10	32	40	
	24	51	9.57 075	31	9.60 313	37	0.39 687	9.96 762	5	9	36	36	
	28	52	9.57 107	32	9.60 349	36	0.39 651	9.96 757	5	8	32	32	
	32	53	9.57 138	31	9.60 386	37	0.39 614	9.96 752	5	7	28	28	
	36	54	9.57 169	31	9.60 422	36	0.39 578	9.96 747	5	6	24	24	
				32		37			5				
27	40	55	9.57 201		9.60 459		0.39 541	9.96 742		5	5	32	20
	44	56	9.57 232	31	9.60 495	36	0.39 505	9.96 737	5	4	16	16	
	48	57	9.57 264	32	9.60 532	37	0.39 468	9.96 732	5	3	12	12	
	52	58	9.57 295	31	9.60 568	36	0.39 432	9.96 727	5	2	8	8	
	56	59	9.57 326	31	9.60 605	37	0.39 395	9.96 722	5	1	4	4	
				32		36			5				
28	0	60	9.57 358		9.60 641		0.39 359	9.96 717		0	32	0	
			L. Los.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.		

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4<sup>h</sup>

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>		22°									
m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.			
28	0	0		9.60 641		0.39 359	9.96 717		60	32	0
	4	1	31	9.60 677	36	0.39 323	9.96 711	6	59		56
	8	2	31	9.60 714	37	0.39 286	9.96 706	5	58		52
	12	3	31	9.60 750	86	0.39 250	9.96 701	5	57		48
	16	4	31	9.60 786	36	0.39 214	9.96 696	5	56		44
			32		37			5			
28	20	5		9.60 823		0.39 177	9.96 691		56	31	40
	24	6	31	9.60 859	36	0.39 141	9.96 686	5	54		36
	28	7	31	9.60 896	36	0.39 105	9.96 681	5	53		32
	32	8	31	9.60 931	36	0.39 069	9.96 676	5	52		28
	36	9	31	9.60 967	36	0.39 033	9.96 670	5	51		24
			31		37			5			
28	40	10		9.61 004		0.38 996	9.96 665		50	31	20
	44	11	31	9.61 040	36	0.38 960	9.96 660	5	49		16
	48	12	31	9.61 076	36	0.38 924	9.96 655	5	48		12
	52	13	31	9.61 112	36	0.38 888	9.96 650	5	47		8
	56	14	31	9.61 148	36	0.38 852	9.96 645	5	46		4
			31		36			5			
29	0	15		9.61 184		0.38 816	9.96 640		45	31	0
	4	16	31	9.61 220	36	0.38 780	9.96 634	6	44		56
	8	17	30	9.61 256	36	0.38 744	9.96 629	5	43		52
	12	18	31	9.61 292	36	0.38 708	9.96 624	5	42		48
	16	19	31	9.61 328	36	0.38 672	9.96 619	5	41		44
			31		36			5			
29	20	20		9.61 364		0.38 636	9.96 614		40	30	40
	24	21	30	9.61 400	36	0.38 600	9.96 608	6	39		36
	28	22	31	9.61 436	36	0.38 564	9.96 603	5	38		32
	32	23	31	9.61 472	36	0.38 528	9.96 598	5	37		28
	36	24	31	9.61 508	36	0.38 492	9.96 593	5	36		24
			30		36			5			
29	40	25		9.61 544		0.38 456	9.96 588		35	30	20
	44	26	31	9.61 579	35	0.38 421	9.96 582	6	34		16
	48	27	30	9.61 615	36	0.38 385	9.96 577	5	33		12
	52	28	31	9.61 651	36	0.38 349	9.96 572	5	32		8
	56	29	30	9.61 687	35	0.38 313	9.96 567	5	31		4
			31		35			5			
30	0	30		9.61 722		0.38 278	9.96 562		30	30	0
	4	31	30	9.61 758	36	0.38 242	9.96 556	6	29		56
	8	32	31	9.61 794	36	0.38 206	9.96 551	5	28		52
	12	33	30	9.61 830	36	0.38 170	9.96 546	5	27		48
	16	34	31	9.61 865	35	0.38 135	9.96 541	6	26		44
			30		36			6			
30	20	35		9.61 901		0.38 099	9.96 535		25	29	40
	24	36	31	9.61 936	35	0.38 064	9.96 530	5	24		36
	28	37	30	9.61 972	36	0.38 028	9.96 525	5	23		32
	32	38	30	9.62 008	36	0.37 992	9.96 520	5	22		28
	36	39	31	9.62 043	35	0.37 957	9.96 514	5	21		24
			31		36			5			
30	40	40		9.62 079		0.37 921	9.96 509		20	29	20
	44	41	30	9.62 114	35	0.37 886	9.96 504	6	19		16
	48	42	30	9.62 150	36	0.37 850	9.96 498	6	18		12
	52	43	30	9.62 185	35	0.37 815	9.96 493	5	17		8
	56	44	31	9.62 221	36	0.37 779	9.96 488	5	16		4
			30		35			5			
31	0	45		9.62 256		0.37 744	9.96 483		15	29	0
	4	46	30	9.62 292	36	0.37 708	9.96 477	6	14		56
	8	47	30	9.62 327	35	0.37 673	9.96 472	5	13		52
	12	48	30	9.62 362	36	0.37 638	9.96 467	5	12		48
	16	49	30	9.62 398	35	0.37 602	9.96 461	5	11		44
			30		35			5			
31	20	50		9.62 433		0.37 567	9.96 456		10	28	40
	24	51	30	9.62 468	36	0.37 532	9.96 451	6	9		36
	28	52	30	9.62 504	35	0.37 496	9.96 445	6	8		32
	32	53	30	9.62 539	35	0.37 461	9.96 440	5	7		28
	36	54	30	9.62 574	35	0.37 426	9.96 435	6	6		24
			30		35			5			
31	40	55		9.62 609		0.37 391	9.96 429		5	28	20
	44	56	30	9.62 645	36	0.37 355	9.96 424	6	4		16
	48	57	29	9.62 680	35	0.37 320	9.96 419	6	3		12
	52	58	30	9.62 715	35	0.37 285	9.96 413	6	2		8
	56	59	30	9.62 750	35	0.37 250	9.96 408	5	1		4
			30		35			5			
32	0	60		9.62 785		0.37 215	9.96 403		0	28	0
		L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.	

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>			23°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
32	0	0	9.59 188		9.62 785		0.37 215	9.96 403		60	28 0
	4	1	9.59 218	30	9.62 820	35	0.37 180	9.96 397	6	59	56
	8	2	9.59 247	29	9.62 855	35	0.37 145	9.96 392	5	58	52
	12	3	9.59 277	30	9.62 890	35	0.37 110	9.96 387	5	57	48
	16	4	9.59 307	30	9.62 926	36	0.37 074	9.96 381	6	56	44
				29		35			5		
32	20	5	9.59 336		9.62 961		0.37 039	9.96 376		55	27 40
	24	6	9.59 366	30	9.62 996	35	0.37 004	9.96 370	6	54	36
	28	7	9.59 396	29	9.63 031	35	0.36 969	9.96 365	5	53	32
	32	8	9.59 425	30	9.63 066	35	0.36 934	9.96 360	5	52	28
	36	9	9.59 455	30	9.63 101	35	0.36 899	9.96 354	6	51	24
				29		34			5		
32	40	10	9.59 484		9.63 135		0.36 865	9.96 349		50	27 20
	44	11	9.59 514	30	9.63 170	35	0.36 830	9.96 343	6	49	16
	48	12	9.59 543	29	9.63 205	35	0.36 795	9.96 338	5	48	12
	52	13	9.59 573	30	9.63 240	35	0.36 760	9.96 333	5	47	8
	56	14	9.59 602	29	9.63 275	35	0.36 725	9.96 327	6	46	4
				30		35			5		
33	0	15	9.59 632		9.63 310		0.36 690	9.96 322		45	27 0
	4	16	9.59 661	29	9.63 345	35	0.36 655	9.96 316	6	44	56
	8	17	9.59 690	29	9.63 379	34	0.36 621	9.96 311	5	43	52
	12	18	9.59 720	30	9.63 414	35	0.36 586	9.96 305	6	42	48
	16	19	9.59 749	29	9.63 449	35	0.36 551	9.96 300	5	41	44
				30		35			6		
33	20	20	9.59 778		9.63 484		0.36 516	9.96 294		40	26 40
	24	21	9.59 808	30	9.63 519	35	0.36 481	9.96 289	5	39	36
	28	22	9.59 837	29	9.63 553	34	0.36 447	9.96 284	6	38	32
	32	23	9.59 866	29	9.63 588	35	0.36 412	9.96 278	5	37	28
	36	24	9.59 896	29	9.63 623	35	0.36 377	9.96 273	5	36	24
				30		34			6		
33	40	25	9.59 924		9.63 657		0.36 343	9.96 267		35	26 20
	44	26	9.59 954	30	9.63 692	35	0.36 308	9.96 262	5	34	16
	48	27	9.59 983	29	9.63 726	34	0.36 274	9.96 256	6	33	12
	52	28	9.60 012	29	9.63 761	35	0.36 239	9.96 251	5	32	8
	56	29	9.60 041	29	9.63 796	35	0.36 204	9.96 245	6	31	4
				30		34			5		
34	0	30	9.60 070		9.63 830		0.36 170	9.96 240		30	26 0
	4	31	9.60 099	29	9.63 865	35	0.36 135	9.96 234	6	29	56
	8	32	9.60 128	29	9.63 899	34	0.36 101	9.96 229	5	28	52
	12	33	9.60 157	29	9.63 934	35	0.36 066	9.96 223	6	27	48
	16	34	9.60 186	29	9.63 968	35	0.36 032	9.96 218	5	26	44
				30		35			6		
34	20	35	9.60 215		9.64 003		0.35 997	9.96 212		25	25 40
	24	36	9.60 244	29	9.64 037	34	0.35 963	9.96 207	5	24	36
	28	37	9.60 273	29	9.64 072	35	0.35 928	9.96 201	6	23	32
	32	38	9.60 302	29	9.64 106	34	0.35 894	9.96 196	5	22	28
	36	39	9.60 331	28	9.64 140	34	0.35 860	9.96 190	5	21	24
				29		35			6		
34	40	40	9.60 359		9.64 175		0.35 825	9.96 185		20	25 20
	44	41	9.60 388	29	9.64 209	34	0.35 791	9.96 179	6	19	16
	48	42	9.60 417	29	9.64 243	34	0.35 757	9.96 174	5	18	12
	52	43	9.60 446	28	9.64 278	35	0.35 722	9.96 168	6	17	8
	56	44	9.60 474	29	9.64 312	34	0.35 688	9.96 162	5	16	4
				30		34			6		
35	0	45	9.60 503		9.64 346		0.35 654	9.96 157		15	25 0
	4	46	9.60 532	29	9.64 381	35	0.35 619	9.96 151	6	14	56
	8	47	9.60 561	28	9.64 415	34	0.35 585	9.96 146	5	13	52
	12	48	9.60 589	29	9.64 449	34	0.35 551	9.96 140	6	12	48
	16	49	9.60 618	28	9.64 483	34	0.35 517	9.96 135	5	11	44
				29		34			6		
35	20	50	9.60 646		9.64 517		0.35 483	9.96 129		10	24 40
	24	51	9.60 675	29	9.64 552	35	0.35 448	9.96 123	6	9	36
	28	52	9.60 704	28	9.64 586	34	0.35 414	9.96 118	5	8	32
	32	53	9.60 732	29	9.64 620	34	0.35 380	9.96 112	6	7	28
	36	54	9.60 761	28	9.64 654	34	0.35 346	9.96 107	5	6	24
				29		34			6		
35	40	55	9.60 789		9.64 688		0.35 312	9.96 101		5	24 20
	44	56	9.60 818	29	9.64 722	34	0.35 278	9.96 095	6	4	16
	48	57	9.60 846	28	9.64 756	34	0.35 244	9.96 090	5	3	12
	52	58	9.60 875	29	9.64 790	31	0.35 210	9.96 084	6	2	8
	56	59	9.60 903	28	9.64 824	34	0.35 176	9.96 079	5	1	4
				29		34			6		
35	0	60	9.60 931		9.64 858		0.35 142	9.96 073		0	24 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>		24°											
m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.					
36	0	0	9.60 931		9.64 858		0.35 142	9.96 078		60	24	0	
	4	1	9.60 960	29	9.64 892	34	0.35 108	9.96 067	6	59		56	
	8	2	9.60 988	28	9.64 926	34	0.35 074	9.96 062	5	58		52	
	12	3	9.61 016	28	9.64 960	34	0.35 040	9.96 056	6	57		48	
	16	4	9.61 045	29	9.64 994	34	0.35 006	9.96 050	6	56		44	
36	20	5	9.61 073	28	9.65 028	34	0.34 972	9.96 045	5	55	23	40	
	24	6	9.61 101	28	9.65 062	34	0.34 938	9.96 039	6	54		36	
	28	7	9.61 129	28	9.65 096	34	0.34 904	9.96 034	5	53		32	
	32	8	9.61 158	29	9.65 130	34	0.34 870	9.96 028	6	52		28	
	36	9	9.61 186	28	9.65 164	34	0.34 836	9.96 022	6	51		24	
36	40	10	9.61 214	28	9.65 197	33	0.34 803	9.96 017	5	50	23	20	
	44	11	9.61 242	28	9.65 231	34	0.34 769	9.96 011	6	49		16	
	48	12	9.61 270	28	9.65 265	34	0.34 735	9.96 005	6	48		12	
	52	13	9.61 298	28	9.65 299	34	0.34 701	9.96 000	5	47		8	
	56	14	9.61 326	28	9.65 333	34	0.34 667	9.95 994	6	46		4	
37	0	15	9.61 354	28	9.65 366	33	0.34 634	9.95 988	6	45	23	0	
	4	16	9.61 382	28	9.65 400	34	0.34 600	9.95 982	6	44		56	
	8	17	9.61 411	29	9.65 434	34	0.34 566	9.95 977	5	43		52	
	12	18	9.61 438	27	9.65 467	33	0.34 533	9.95 971	6	42		48	
	16	19	9.61 466	28	9.65 501	34	0.34 499	9.95 965	6	41		44	
37	20	20	9.61 494	28	9.65 535	34	0.34 465	9.95 960	5	40	22	40	
	24	21	9.61 522	28	9.65 568	33	0.34 432	9.95 954	6	39		36	
	28	22	9.61 550	28	9.65 602	34	0.34 398	9.95 948	6	38		32	
	32	23	9.61 578	28	9.65 636	34	0.34 364	9.95 942	6	37		28	
	36	24	9.61 606	28	9.65 669	33	0.34 331	9.95 937	6	36		24	
37	40	25	9.61 634	28	9.65 703	34	0.34 297	9.95 931	6	35	22	20	
	44	26	9.61 662	28	9.65 736	33	0.34 264	9.95 925	6	34		16	
	48	27	9.61 689	27	9.65 770	34	0.34 230	9.95 920	5	33		12	
	52	28	9.61 717	28	9.65 803	33	0.34 197	9.95 914	6	32		8	
	56	29	9.61 745	28	9.65 837	34	0.34 163	9.95 908	6	31		4	
38	0	30	9.61 773	28	9.65 870	33	0.34 130	9.95 902	6	30	22	0	
	4	31	9.61 800	27	9.65 904	34	0.34 096	9.95 897	5	29		56	
	8	32	9.61 828	28	9.65 937	33	0.34 063	9.95 891	6	28		52	
	12	33	9.61 856	28	9.65 971	34	0.34 029	9.95 885	6	27		48	
	16	34	9.61 883	27	9.66 004	33	0.33 996	9.95 879	6	26		44	
38	20	35	9.61 911	28	9.66 038	34	0.33 962	9.95 873	6	25	21	40	
	24	36	9.61 939	28	9.66 071	33	0.33 929	9.95 868	5	24		36	
	28	37	9.61 966	27	9.66 104	33	0.33 896	9.95 862	6	23		32	
	32	38	9.61 994	28	9.66 138	34	0.33 862	9.95 856	6	22		28	
	36	39	9.62 021	27	9.66 171	33	0.33 829	9.95 850	6	21		24	
38	40	40	9.62 049	28	9.66 204	33	0.33 796	9.95 844	6	20	21	20	
	44	41	9.62 076	27	9.66 238	34	0.33 762	9.95 839	5	19		16	
	48	42	9.62 104	28	9.66 271	33	0.33 729	9.95 833	6	18		12	
	52	43	9.62 131	27	9.66 304	33	0.33 696	9.95 827	6	17		8	
	56	44	9.62 159	28	9.66 337	33	0.33 663	9.95 821	6	16		4	
39	0	45	9.62 186	27	9.66 371	34	0.33 629	9.95 815	6	15	21	0	
	4	46	9.62 214	28	9.66 404	33	0.33 596	9.95 810	5	14		56	
	8	47	9.62 241	27	9.66 437	33	0.33 563	9.95 804	6	13		52	
	12	48	9.62 268	27	9.66 470	33	0.33 530	9.95 798	6	12		48	
	16	49	9.62 296	28	9.66 503	33	0.33 497	9.95 792	6	11		44	
39	20	50	9.62 323	27	9.66 537	34	0.33 463	9.95 786	6	10	20	40	
	24	51	9.62 350	27	9.66 570	33	0.33 430	9.95 780	6	9		36	
	28	52	9.62 377	27	9.66 603	33	0.33 397	9.95 775	5	8		32	
	32	53	9.62 405	28	9.66 636	33	0.33 364	9.95 769	6	7		28	
	36	54	9.62 432	27	9.66 669	33	0.33 331	9.95 763	6	6		24	
39	40	55	9.62 459	27	9.66 702	33	0.33 298	9.95 757	6	5	20	20	
	44	56	9.62 486	27	9.66 735	33	0.33 265	9.95 751	6	4		16	
	48	57	9.62 513	27	9.66 768	33	0.33 232	9.95 745	6	3		12	
	52	58	9.62 541	28	9.66 801	33	0.33 199	9.95 739	6	2		8	
	56	59	9.62 568	27	9.66 834	33	0.33 166	9.95 733	6	1		4	
40	0	60	9.62 595	27	9.66 867	33	0.33 133	9.95 728	5	0	20	0	
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.			m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>a</sup>		25°											
m.	s.	L. Sin.	d.	L. Tang.	e. d.	L. Cotg.	L. Cos.	d.					
40	0	0	9.62 595		9.66 867		0.33 133	9.95 728		60	20	0	
	4	1	9.62 622	27	9.66 900	33	0.33 100	9.95 722	6	59		56	
	8	2	9.62 649	27	9.66 933	33	0.33 067	9.95 716	6	58		52	
	12	3	9.62 676	27	9.66 966	33	0.33 034	9.95 710	6	57		48	
	16	4	9.62 703	27	9.66 999	33	0.33 001	9.95 704	6	56		44	
				27		33			6				
40	20	5	9.62 730		9.67 032		0.32 968	9.95 698		55	19	40	
	24	6	9.62 757	27	9.67 065	33	0.32 935	9.95 692	6	54		36	
	28	7	9.62 784	27	9.67 098	33	0.32 902	9.95 686	6	53		32	
	32	8	9.62 811	27	9.67 131	33	0.32 869	9.95 680	6	52		28	
	36	9	9.62 838	27	9.67 163	32	0.32 837	9.95 674	6	51		24	
				27		33			6				
40	40	10	9.62 865		9.67 196		0.32 804	9.95 668		50	19	20	
	44	11	9.62 892	27	9.67 229	33	0.32 771	9.95 663	5	49		16	
	48	12	9.62 918	26	9.67 262	33	0.32 738	9.95 657	6	48		12	
	52	13	9.62 945	27	9.67 295	33	0.32 705	9.95 651	6	47		8	
	56	14	9.62 972	27	9.67 327	32	0.32 673	9.95 645	6	46		4	
				27		33			6				
41	0	15	9.62 999		9.67 360		0.32 640	9.95 639		45	19	0	
	4	16	9.63 026	27	9.67 393	33	0.32 607	9.95 633	6	44		56	
	8	17	9.63 052	26	9.67 426	33	0.32 574	9.95 627	6	43		52	
	12	18	9.63 079	27	9.67 458	32	0.32 542	9.95 621	6	42		48	
	16	19	9.63 106	27	9.67 491	33	0.32 509	9.95 615	6	41		44	
				27		33			6				
41	20	20	9.63 133		9.67 524		0.32 476	9.95 609		40	18	40	
	24	21	9.63 159	26	9.67 556	32	0.32 444	9.95 603	6	39		36	
	28	22	9.63 186	27	9.67 589	33	0.32 411	9.95 597	6	38		32	
	32	23	9.63 213	27	9.67 622	33	0.32 378	9.95 591	6	37		28	
	36	24	9.63 239	26	9.67 654	32	0.32 346	9.95 585	6	36		24	
				27		33			6				
41	40	25	9.63 266		9.67 687		0.32 313	9.95 579		35	18	20	
	44	26	9.63 292	26	9.67 719	32	0.32 281	9.95 573	6	34		16	
	48	27	9.63 319	27	9.67 752	33	0.32 248	9.95 567	6	33		12	
	52	28	9.63 345	26	9.67 785	33	0.32 215	9.95 561	6	32		8	
	56	29	9.63 372	27	9.67 817	32	0.32 183	9.95 555	6	31		4	
				26		33			6				
42	0	30	9.63 398		9.67 850		0.32 150	9.95 549		30	18	0	
	4	31	9.63 425	27	9.67 882	32	0.32 118	9.95 543	6	29		56	
	8	32	9.63 451	26	9.67 915	33	0.32 085	9.95 537	6	28		52	
	12	33	9.63 478	27	9.67 947	32	0.32 053	9.95 531	6	27		48	
	16	34	9.63 504	26	9.67 980	33	0.32 020	9.95 525	6	26		44	
				27		32			6				
42	20	35	9.63 531		9.68 012		0.31 988	9.95 519		25	17	40	
	24	36	9.63 557	26	9.68 044	32	0.31 956	9.95 513	6	24		36	
	28	37	9.63 583	26	9.68 077	33	0.31 923	9.95 507	6	23		32	
	32	38	9.63 610	27	9.68 109	32	0.31 891	9.95 500	7	22		28	
	36	39	9.63 636	26	9.68 142	33	0.31 858	9.95 494	6	21		24	
				26		32			6				
42	40	40	9.63 662		9.68 174		0.31 826	9.95 488		20	17	20	
	44	41	9.63 689	27	9.68 206	32	0.31 794	9.95 482	6	19		16	
	48	42	9.63 715	26	9.68 239	33	0.31 761	9.95 476	6	18		12	
	52	43	9.63 741	26	9.68 271	32	0.31 729	9.95 470	6	17		8	
	56	44	9.63 767	26	9.68 303	32	0.31 697	9.95 464	6	16		4	
				27		33			6				
43	0	45	9.63 794		9.68 336		0.31 664	9.95 458		15	17	0	
	4	46	9.63 820	26	9.68 368	32	0.31 632	9.95 452	6	14		56	
	8	47	9.63 846	26	9.68 400	32	0.31 600	9.95 446	6	13		52	
	12	48	9.63 872	26	9.68 432	32	0.31 568	9.95 440	6	12		48	
	16	49	9.63 898	26	9.68 465	33	0.31 535	9.95 434	6	11		44	
				26		32			7				
43	20	50	9.63 924		9.68 497		0.31 503	9.95 427		10	16	40	
	24	51	9.63 950	26	9.68 529	32	0.31 471	9.95 421	6	9		36	
	28	52	9.63 976	26	9.68 561	32	0.31 439	9.95 415	6	8		32	
	32	53	9.64 002	26	9.68 593	32	0.31 407	9.95 409	6	7		28	
	36	54	9.64 028	26	9.68 626	33	0.31 374	9.95 403	6	6		24	
				26		32			6				
43	40	55	9.64 054		9.68 658		0.31 342	9.95 397		5	16	20	
	44	56	9.64 080	26	9.68 690	32	0.31 310	9.95 391	6	4		16	
	48	57	9.64 106	26	9.68 722	32	0.31 278	9.95 384	7	3		12	
	52	58	9.64 132	26	9.68 754	32	0.31 246	9.95 378	6	2		8	
	56	59	9.64 158	26	9.68 786	32	0.31 214	9.95 372	6	1		4	
				26		32			6				
44	0	60	9.64 184		9.68 818		0.31 182	9.95 366		0	16	0	
		L. Cos.	d.	L. Cotg.	e. d.	L. Tang.	L. Sin.	d.			m.	s.	

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>		26°											
m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.					
44	0	0	9.64 184		9.68 818		0.31 182	9.95 366		60	16	0	
	4	1	9.64 210	26	9.68 850	32	0.31 156	9.95 360	6	59		56	
	8	2	9.64 236	26	9.68 882	32	0.31 118	9.95 354	6	58		52	
	12	3	9.64 262	26	9.68 914	32	0.31 086	9.95 348	6	57		48	
	16	4	9.64 288	25	9.68 946	32	0.31 054	9.95 341	6	56		44	
				25		32			6				
44	20	5	9.64 313		9.68 978		0.31 022	9.95 335		55	15	40	
	24	6	9.64 339	26	9.69 010	32	0.30 990	9.95 329	6	54		36	
	28	7	9.64 365	26	9.69 042	32	0.30 958	9.95 323	6	53		32	
	32	8	9.64 391	26	9.69 074	32	0.30 926	9.95 317	6	52		28	
	36	9	9.64 417	25	9.69 106	32	0.30 894	9.95 310	6	51		24	
				25		32			6				
44	40	10	9.64 442		9.69 138		0.30 862	9.95 304		50	15	20	
	44	11	9.64 468	26	9.69 170	32	0.30 830	9.95 298	6	49		16	
	48	12	9.64 494	26	9.69 202	32	0.30 798	9.95 292	6	48		12	
	52	13	9.64 519	25	9.69 234	32	0.30 766	9.95 286	6	47		8	
	56	14	9.64 545	25	9.69 266	32	0.30 734	9.95 279	6	46		4	
				25		32			6				
45	0	15	9.64 571		9.69 298		0.30 702	9.95 273		45	15	0	
	4	16	9.64 596	26	9.69 329	31	0.30 671	9.95 267	6	44		56	
	8	17	9.64 622	25	9.69 361	32	0.30 639	9.95 261	6	43		52	
	12	18	9.64 647	26	9.69 393	32	0.30 607	9.95 254	6	42		48	
	16	19	9.64 673	25	9.69 425	32	0.30 575	9.95 248	6	41		44	
				25		32			6				
45	20	20	9.64 698		9.69 457		0.30 543	9.95 242		40	14	40	
	24	21	9.64 724	26	9.69 488	31	0.30 512	9.95 236	6	39		36	
	28	22	9.64 749	25	9.69 520	32	0.30 480	9.95 229	6	38		32	
	32	23	9.64 775	26	9.69 552	32	0.30 448	9.95 223	6	37		28	
	36	24	9.64 800	25	9.69 584	32	0.30 416	9.95 217	6	36		24	
				26		31			6				
45	40	25	9.64 826		9.69 615		0.30 385	9.95 211		35	14	20	
	44	26	9.64 851	25	9.69 647	32	0.30 353	9.95 204	7	34		16	
	48	27	9.64 877	26	9.69 679	32	0.30 321	9.95 198	6	33		12	
	52	28	9.64 902	25	9.69 710	31	0.30 290	9.95 192	6	32		8	
	56	29	9.64 927	25	9.69 742	32	0.30 258	9.95 185	6	31		4	
				26		32			6				
46	0	30	9.64 953		9.69 774		0.30 226	9.95 179		30	14	0	
	4	31	9.64 978	25	9.69 805	31	0.30 195	9.95 173	6	29		56	
	8	32	9.65 003	26	9.69 837	32	0.30 163	9.95 167	6	28		52	
	12	33	9.65 029	25	9.69 868	32	0.30 132	9.95 160	6	27		48	
	16	34	9.65 054	25	9.69 900	32	0.30 100	9.95 154	6	26		44	
				25		32			6				
46	20	35	9.65 079		9.69 932		0.30 068	9.95 148		25	13	40	
	24	36	9.65 104	25	9.69 963	31	0.30 037	9.95 141	7	24		36	
	28	37	9.65 130	26	9.69 995	32	0.30 005	9.95 135	6	23		32	
	32	38	9.65 155	25	9.70 026	32	0.29 974	9.95 129	6	22		28	
	36	39	9.65 180	25	9.70 058	31	0.29 942	9.95 122	6	21		24	
				25		31			6				
46	40	40	9.65 205		9.70 089		0.29 911	9.95 116		20	13	20	
	44	41	9.65 230	25	9.70 121	32	0.29 879	9.95 110	6	19		16	
	48	42	9.65 255	25	9.70 152	31	0.29 848	9.95 103	6	18		12	
	52	43	9.65 281	26	9.70 184	32	0.29 816	9.95 097	6	17		8	
	56	44	9.65 306	25	9.70 215	31	0.29 785	9.95 090	6	16		4	
				25		32			6				
47	0	45	9.65 331		9.70 247		0.29 753	9.95 084		15	13	0	
	4	46	9.65 356	25	9.70 278	31	0.29 722	9.95 078	6	14		56	
	8	47	9.65 381	25	9.70 309	31	0.29 691	9.95 071	6	13		52	
	12	48	9.65 406	25	9.70 341	32	0.29 659	9.95 065	6	12		48	
	16	49	9.65 431	25	9.70 372	31	0.29 628	9.95 059	6	11		44	
				25		32			6				
47	20	50	9.65 456		9.70 404		0.29 596	9.95 052		10	12	40	
	24	51	9.65 481	25	9.70 435	31	0.29 565	9.95 046	6	9		36	
	28	52	9.65 506	25	9.70 466	32	0.29 534	9.95 039	6	8		32	
	32	53	9.65 531	25	9.70 498	31	0.29 502	9.95 033	6	7		28	
	36	54	9.65 556	24	9.70 529	31	0.29 471	9.95 027	6	6		24	
				24		31			6				
47	40	55	9.65 580		9.70 560		0.29 440	9.95 020		5	12	20	
	44	56	9.65 605	25	9.70 592	32	0.29 408	9.95 014	6	4		16	
	48	57	9.65 630	25	9.70 623	31	0.29 377	9.95 007	6	3		12	
	52	58	9.65 655	25	9.70 654	31	0.29 346	9.95 001	6	2		8	
	56	59	9.65 680	25	9.70 685	32	0.29 315	9.94 995	6	1		4	
				25		32			6				
48	0	60	9.65 705		9.70 717		0.29 283	9.94 988		0	12	0	
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.			m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1<sup>h</sup>

27°

m.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
48	0	0	9.65 705	9.70 717		0.29 283	9.94 988		60	12 0
	4	1	9.65 729	9.70 748	31	0.29 252	9.94 982	6	59	56
	8	2	9.65 754	9.70 779	31	0.29 221	9.94 975	7	58	52
	12	3	9.65 779	9.70 810	31	0.29 190	9.94 969	6	57	48
	16	4	9.65 804	9.70 841	32	0.29 159	9.94 962	7	56	44
48	20	5	9.65 828	9.70 873		0.29 127	9.94 956	6	55	11 40
	24	6	9.65 853	9.70 904	31	0.29 096	9.94 949	7	54	36
	28	7	9.65 878	9.70 935	31	0.29 065	9.94 943	6	53	32
	32	8	9.65 902	9.70 966	31	0.29 034	9.94 936	7	52	28
	36	9	9.65 927	9.70 997	31	0.29 003	9.94 930	6	51	24
48	40	10	9.65 952	9.71 028		0.28 972	9.94 923	7	50	11 20
	44	11	9.65 976	9.71 059	31	0.28 941	9.94 917	6	49	16
	48	12	9.66 001	9.71 090	31	0.28 910	9.94 911	6	48	12
	52	13	9.66 025	9.71 121	31	0.28 879	9.94 904	7	47	8
	56	14	9.66 050	9.71 153	32	0.28 847	9.94 898	6	46	4
49	0	15	9.66 075	9.71 184		0.28 816	9.94 891	7	45	11 0
	4	16	9.66 099	9.71 215	31	0.28 785	9.94 885	6	44	56
	8	17	9.66 124	9.71 246	31	0.28 754	9.94 878	7	43	52
	12	18	9.66 148	9.71 277	31	0.28 723	9.94 871	7	42	48
	16	19	9.66 173	9.71 308	31	0.28 692	9.94 865	6	41	44
49	20	20	9.66 197	9.71 339		0.28 661	9.94 858	7	40	10 40
	24	21	9.66 221	9.71 370	31	0.28 630	9.94 852	6	39	36
	28	22	9.66 246	9.71 401	31	0.28 599	9.94 845	7	38	32
	32	23	9.66 270	9.71 431	30	0.28 569	9.94 839	6	37	28
	36	24	9.66 295	9.71 462	31	0.28 538	9.94 832	7	36	24
49	40	25	9.66 319	9.71 493		0.28 507	9.94 826	6	35	10 20
	44	26	9.66 343	9.71 524	31	0.28 476	9.94 819	7	34	16
	48	27	9.66 368	9.71 555	31	0.28 445	9.94 813	6	33	12
	52	28	9.66 392	9.71 586	31	0.28 414	9.94 806	7	32	8
	56	29	9.66 416	9.71 617	31	0.28 383	9.94 799	6	31	4
50	0	30	9.66 441	9.71 648		0.28 352	9.94 793	7	30	10 0
	4	31	9.66 465	9.71 679	31	0.28 321	9.94 786	6	29	56
	8	32	9.66 489	9.71 709	30	0.28 291	9.94 780	7	28	52
	12	33	9.66 513	9.71 740	31	0.28 260	9.94 773	6	27	48
	16	34	9.66 537	9.71 771	31	0.28 229	9.94 767	7	26	44
50	20	35	9.66 562	9.71 802		0.28 198	9.94 760	6	25	9 40
	24	36	9.66 586	9.71 833	31	0.28 167	9.94 753	7	24	36
	28	37	9.66 610	9.71 863	30	0.28 137	9.94 747	6	23	32
	32	38	9.66 634	9.71 894	31	0.28 106	9.94 740	7	22	28
	36	39	9.66 658	9.71 925	31	0.28 075	9.94 734	6	21	24
50	40	40	9.66 682	9.71 955		0.28 045	9.94 727	7	20	9 20
	44	41	9.66 706	9.71 986	31	0.28 014	9.94 720	6	19	16
	48	42	9.66 731	9.72 017	31	0.27 983	9.94 714	7	18	12
	52	43	9.66 755	9.72 048	31	0.27 952	9.94 707	6	17	8
	56	44	9.66 779	9.72 078	30	0.27 922	9.94 700	7	16	4
51	0	45	9.66 803	9.72 109		0.27 891	9.94 694	6	15	9 0
	4	46	9.66 827	9.72 140	31	0.27 860	9.94 687	7	14	56
	8	47	9.66 851	9.72 170	30	0.27 830	9.94 680	6	13	52
	12	48	9.66 875	9.72 201	31	0.27 799	9.94 674	7	12	48
	16	49	9.66 899	9.72 231	30	0.27 769	9.94 667	6	11	44
51	20	50	9.66 922	9.72 262		0.27 738	9.94 660	7	10	8 40
	24	51	9.66 946	9.72 293	31	0.27 707	9.94 654	6	9	36
	28	52	9.66 970	9.72 323	30	0.27 677	9.94 647	7	8	32
	32	53	9.66 994	9.72 354	31	0.27 646	9.94 640	6	7	28
	36	54	9.67 018	9.72 384	30	0.27 616	9.94 634	7	6	24
51	40	55	9.67 042	9.72 415		0.27 585	9.94 627	6	5	8 20
	44	56	9.67 066	9.72 445	30	0.27 555	9.94 620	7	4	16
	48	57	9.67 090	9.72 476	31	0.27 524	9.94 614	6	3	12
	52	58	9.67 113	9.72 506	30	0.27 494	9.94 607	7	2	8
	56	59	9.67 137	9.72 537	31	0.27 463	9.94 600	6	1	4
52	0	60	9.67 161	9.72 567		0.27 433	9.94 593	7	0	8 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	m. s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>			28°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
52	0	0	9.67 161		9.72 567		0.27 433	9.94 593		60	8 0
	4	1	9.67 185	24	9.72 598	31	0.27 402	9.94 587	6	59	56
	8	2	9.67 208	23	9.72 628	30	0.27 372	9.94 580	7	58	52
	12	3	9.67 232	24	9.72 659	31	0.27 341	9.94 573	7	57	48
	16	4	9.67 256	24	9.72 689	30	0.27 311	9.94 567	6	56	44
				24		31			7		
52	20	5	9.67 280		9.72 720		0.27 280	9.94 560		55	7 40
	24	6	9.67 303	23	9.72 750	30	0.27 250	9.94 553	7	54	36
	28	7	9.67 327	24	9.72 780	30	0.27 220	9.94 546	7	53	32
	32	8	9.67 350	23	9.72 811	31	0.27 189	9.94 540	6	52	28
	36	9	9.67 374	24	9.72 841	30	0.27 159	9.94 533	7	51	24
				24		31			7		
52	40	10	9.67 398		9.72 872		0.27 128	9.94 526		50	7 20
	44	11	9.67 421	23	9.72 902	30	0.27 098	9.94 519	7	49	16
	48	12	9.67 445	24	9.72 932	30	0.27 068	9.94 513	6	48	12
	52	13	9.67 468	23	9.72 963	31	0.27 037	9.94 506	7	47	8
	56	14	9.67 492	24	9.72 993	30	0.27 007	9.94 499	7	46	4
				23		30			7		
53	0	15	9.67 515		9.73 023		0.26 977	9.94 492		45	7 0
	4	16	9.67 539	24	9.73 054	31	0.26 946	9.94 485	7	44	56
	8	17	9.67 562	23	9.73 084	30	0.26 916	9.94 479	6	43	52
	12	18	9.67 586	24	9.73 114	30	0.26 886	9.94 472	7	42	48
	16	19	9.67 609	23	9.73 144	30	0.26 856	9.94 465	7	41	44
				24		31			7		
53	20	20	9.67 633		9.73 175		0.26 825	9.94 458		40	6 40
	24	21	9.67 656	23	9.73 205	30	0.26 795	9.94 451	7	39	36
	28	22	9.67 680	24	9.73 235	30	0.26 765	9.94 445	6	38	32
	32	23	9.67 703	23	9.73 265	30	0.26 735	9.94 438	7	37	28
	36	24	9.67 726	24	9.73 295	31	0.26 705	9.94 431	7	36	24
				24		30			7		
53	40	25	9.67 750		9.73 326		0.26 674	9.94 424		35	6 20
	44	26	9.67 773	23	9.73 356	30	0.26 644	9.94 417	7	34	16
	48	27	9.67 796	24	9.73 386	30	0.26 614	9.94 410	7	33	12
	52	28	9.67 820	23	9.73 416	30	0.26 584	9.94 404	6	32	8
	56	29	9.67 843	24	9.73 446	30	0.26 554	9.94 397	7	31	4
				23		30			7		
54	0	30	9.67 866		9.73 476		0.26 524	9.94 390		30	6 0
	4	31	9.67 890	24	9.73 507	31	0.26 493	9.94 383	7	29	56
	8	32	9.67 913	23	9.73 537	30	0.26 463	9.94 376	7	28	52
	12	33	9.67 936	23	9.73 567	30	0.26 433	9.94 369	7	27	48
	16	34	9.67 959	23	9.73 597	30	0.26 403	9.94 362	7	26	44
				23		30			7		
54	20	35	9.67 982		9.73 627		0.26 373	9.94 355		25	5 40
	24	36	9.68 006	24	9.73 657	30	0.26 343	9.94 349	6	24	36
	28	37	9.68 029	23	9.73 687	30	0.26 313	9.94 342	7	23	32
	32	38	9.68 052	23	9.73 717	30	0.26 283	9.94 335	7	22	28
	36	39	9.68 075	23	9.73 747	30	0.26 253	9.94 328	7	21	24
				23		30			7		
54	40	40	9.68 098		9.73 777		0.26 223	9.94 321		20	5 20
	44	41	9.68 121	23	9.73 807	30	0.26 193	9.94 314	7	19	16
	48	42	9.68 144	23	9.73 837	30	0.26 163	9.94 307	7	18	12
	52	43	9.68 167	23	9.73 867	30	0.26 133	9.94 300	7	17	8
	56	44	9.68 190	23	9.73 897	30	0.26 103	9.94 293	7	16	4
				23		30			7		
55	0	45	9.68 213		9.73 927		0.26 073	9.94 286		15	5 0
	4	46	9.68 237	24	9.73 957	30	0.26 043	9.94 279	7	14	56
	8	47	9.68 260	23	9.73 987	30	0.26 013	9.94 273	6	13	52
	12	48	9.68 283	23	9.74 017	30	0.25 983	9.94 266	7	12	48
	16	49	9.68 306	22	9.74 047	30	0.25 953	9.94 259	7	11	44
				23		30			7		
55	20	50	9.68 328		9.74 077		0.25 923	9.94 252		10	4 40
	24	51	9.68 351	23	9.74 107	30	0.25 893	9.94 245	7	9	36
	28	52	9.68 374	23	9.74 137	30	0.25 863	9.94 238	7	8	32
	32	53	9.68 397	23	9.74 166	29	0.25 834	9.94 231	7	7	28
	36	54	9.68 420	23	9.74 196	30	0.25 804	9.94 224	7	6	24
				23		30			7		
55	40	55	9.68 443		9.74 226		0.25 774	9.94 217		5	4 20
	44	56	9.68 466	23	9.74 256	30	0.25 744	9.94 210	7	4	16
	48	57	9.68 489	23	9.74 286	30	0.25 714	9.94 203	7	3	12
	52	58	9.68 512	23	9.74 316	30	0.25 684	9.94 196	7	2	8
	56	59	9.68 534	22	9.74 345	29	0.25 655	9.94 189	7	1	4
				23		30			7		
56	0	60	9.68 557		9.74 375		0.25 625	9.94 182		0	4 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>		29°																	
m.	s.	'	L. Sin.	d.	L. Tang.	e. d.	L. Cotg.	L. Cos.	d.										
56	0	0	9.68 557		9.74 375		0.25 625	9.94 182		60	4	0							
	4	1	9.68 580	23	9.74 405	30	0.25 595	9.94 175	7	59		56							
	8	2	9.68 603	23	9.74 435	30	0.25 565	9.94 168	7	58		52							
	12	3	9.68 625	22	9.74 465	30	0.25 535	9.94 161	7	57		48							
	16	4	9.68 648	23	9.74 494	29	0.25 506	9.94 154	7	56		44							
				23		30			7										
56	20	5	9.68 671		9.74 524		0.25 476	9.94 147		55	3	40							
	24	6	9.68 694	23	9.74 554	30	0.25 446	9.94 140	7	54		36							
	28	7	9.68 716	22	9.74 583	29	0.25 417	9.94 133	7	53		32							
	32	8	9.68 739	23	9.74 613	30	0.25 387	9.94 126	7	52		28							
	36	9	9.68 762	23	9.74 643	30	0.25 357	9.94 119	7	51		24							
				22		30			7										
56	40	10	9.68 784		9.74 673		0.25 327	9.94 112		50	3	20							
	44	11	9.68 807	23	9.74 702	29	0.25 298	9.94 105	7	49		16							
	48	12	9.68 829	22	9.74 732	30	0.25 268	9.94 098	7	48		12							
	52	13	9.68 852	23	9.74 762	30	0.25 238	9.94 090	8	47		8							
	56	14	9.68 875	22	9.74 791	29	0.25 209	9.94 083	7	46		4							
				23		30			7										
57	0	15	9.68 897		9.74 821		0.25 179	9.94 076		45	3	0							
	4	16	9.68 920	23	9.74 851	30	0.25 149	9.94 069	7	44		56							
	8	17	9.68 942	22	9.74 880	29	0.25 120	9.94 062	7	43		52							
	12	18	9.68 965	23	9.74 910	30	0.25 090	9.94 055	7	42		48							
	16	19	9.68 987	22	9.74 939	29	0.25 061	9.94 048	7	41		44							
				23		30			7										
57	20	20	9.69 010		9.74 969		0.25 031	9.94 041		40	2	40							
	24	21	9.69 032	22	9.74 998	29	0.25 002	9.94 034	7	39		36							
	28	22	9.69 055	23	9.75 028	30	0.24 972	9.94 027	7	38		32							
	32	23	9.69 077	22	9.75 058	30	0.24 942	9.94 020	7	37		28							
	36	24	9.69 100	22	9.75 087	29	0.24 913	9.94 012	8	36		24							
				23		30			7										
57	40	25	9.69 122		9.75 117		0.24 883	9.94 005		35	2	20							
	44	26	9.69 144	22	9.75 146	29	0.24 854	9.93 998	7	34		16							
	48	27	9.69 167	23	9.75 176	30	0.24 824	9.93 991	7	33		12							
	52	28	9.69 189	22	9.75 205	29	0.24 795	9.93 984	7	32		8							
	56	29	9.69 212	23	9.75 235	30	0.24 765	9.93 977	7	31		4							
				22		29			7										
58	0	30	9.69 234		9.75 264		0.24 736	9.93 970		30	2	0							
	4	31	9.69 256	22	9.75 294	30	0.24 706	9.93 963	7	29		56							
	8	32	9.69 279	23	9.75 323	29	0.24 677	9.93 955	8	28		52							
	12	33	9.69 301	22	9.75 353	30	0.24 647	9.93 948	7	27		48							
	16	34	9.69 323	22	9.75 382	29	0.24 618	9.93 941	7	26		44							
				23		29			7										
58	20	35	9.69 345		9.75 411		0.24 589	9.93 934		25	1	40							
	24	36	9.69 368	23	9.75 441	30	0.24 559	9.93 927	7	24		36							
	28	37	9.69 390	22	9.75 470	29	0.24 530	9.93 920	7	23		32							
	32	38	9.69 412	22	9.75 500	30	0.24 500	9.93 912	8	22		28							
	36	39	9.69 434	22	9.75 529	29	0.24 471	9.93 905	7	21		24							
				23		29			7										
58	40	40	9.69 456		9.75 558		0.24 442	9.93 898		20	1	20							
	44	41	9.69 479	23	9.75 588	30	0.24 412	9.93 891	7	19		16							
	48	42	9.69 501	22	9.75 617	29	0.24 383	9.93 884	7	18		12							
	52	43	9.69 523	22	9.75 647	30	0.24 353	9.93 876	8	17		8							
	56	44	9.69 545	22	9.75 676	29	0.24 324	9.93 869	7	16		4							
				23		29			7										
59	0	45	9.69 567		9.75 705		0.24 295	9.93 862		15	1	0							
	4	46	9.69 589	22	9.75 735	30	0.24 265	9.93 855	7	14		56							
	8	47	9.69 611	22	9.75 764	29	0.24 236	9.93 847	8	13		52							
	12	48	9.69 633	22	9.75 793	29	0.24 207	9.93 840	7	12		48							
	16	49	9.69 655	22	9.75 822	29	0.24 178	9.93 833	7	11		44							
				23		30			7										
59	20	50	9.69 677		9.75 852		0.24 148	9.93 826		10	0	40							
	24	51	9.69 699	22	9.75 881	29	0.24 119	9.93 819	7	9		36							
	28	52	9.69 721	22	9.75 910	29	0.24 090	9.93 811	8	8		32							
	32	53	9.69 743	22	9.75 939	29	0.24 061	9.93 804	7	7		28							
	36	54	9.69 765	22	9.75 969	30	0.24 031	9.93 797	8	6		24							
				23		29			7										
59	40	55	9.69 787		9.75 998		0.24 002	9.93 789		5	0	20							
	44	56	9.69 809	22	9.76 027	29	0.23 973	9.93 782	7	4		16							
	48	57	9.69 831	22	9.76 056	29	0.23 944	9.93 775	7	3		12							
	52	58	9.69 853	22	9.76 086	30	0.23 914	9.93 768	7	2		8							
	56	59	9.69 875	22	9.76 115	29	0.23 885	9.93 760	8	1		4							
				23		29			7										
60	0	60	9.69 897		9.76 144		0.23 856	9.93 753		0	0	0							
			L. Cos.	d.	L. Cotg.	e. d.	L. Tang.	L. Sin.	d.	'		m. s.							

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>			30°								
m.	s.	°	L. Sin.	d.	L. Tang.	e. d.	L. Cotg.	L. Cos.	d.		
0	0	0	9.69 897	22	9.76 144	29	0.23 856	9.93 753	7	60	0
	4	1	9.69 919	22	9.76 173	29	0.23 827	9.93 746	8	59	56
	8	2	9.69 941	22	9.76 202	29	0.23 798	9.93 738	7	58	52
	12	3	9.69 963	21	9.76 231	30	0.23 769	9.93 731	7	57	48
	16	4	9.69 984	22	9.76 261	29	0.23 739	9.93 724	7	56	44
0	20	5	9.70 006	22	9.76 290	29	0.23 710	9.93 717	8	55	40
	24	6	9.70 028	22	9.76 319	29	0.23 681	9.93 709	7	54	36
	28	7	9.70 050	22	9.76 348	29	0.23 652	9.93 702	7	53	32
	32	8	9.70 072	21	9.76 377	29	0.23 623	9.93 696	8	52	28
	36	9	9.70 093	22	9.76 406	29	0.23 594	9.93 687	7	51	24
0	40	10	9.70 115	22	9.76 435	29	0.23 565	9.93 680	7	50	20
	44	11	9.70 137	22	9.76 464	29	0.23 536	9.93 673	8	49	16
	48	12	9.70 159	21	9.76 493	29	0.23 507	9.93 666	7	48	12
	52	13	9.70 180	22	9.76 522	29	0.23 478	9.93 658	8	47	8
	56	14	9.70 202	22	9.76 551	29	0.23 449	9.93 650	7	46	4
1	0	15	9.70 224	21	9.76 580	29	0.23 420	9.93 643	7	45	0
	4	16	9.70 245	22	9.76 609	29	0.23 391	9.93 636	8	44	56
	8	17	9.70 267	21	9.76 639	30	0.23 361	9.93 628	7	43	52
	12	18	9.70 288	21	9.76 668	29	0.23 332	9.93 621	7	42	48
	16	19	9.70 310	22	9.76 697	28	0.23 303	9.93 614	8	41	44
1	20	20	9.70 332	21	9.76 725	29	0.23 275	9.93 606	7	40	40
	24	21	9.70 353	22	9.76 754	29	0.23 246	9.93 599	8	39	36
	28	22	9.70 375	21	9.76 783	29	0.23 217	9.93 591	7	38	32
	32	23	9.70 396	22	9.76 812	29	0.23 188	9.93 584	8	37	28
	36	24	9.70 418	21	9.76 841	29	0.23 159	9.93 577	7	36	24
1	40	25	9.70 439	22	9.76 870	29	0.23 130	9.93 569	7	35	20
	44	26	9.70 461	21	9.76 899	29	0.23 101	9.93 562	8	34	16
	48	27	9.70 482	22	9.76 928	29	0.23 072	9.93 554	7	33	12
	52	28	9.70 504	21	9.76 957	29	0.23 043	9.93 547	8	32	8
	56	29	9.70 525	22	9.76 986	29	0.23 014	9.93 539	7	31	4
2	0	30	9.70 547	21	9.77 015	29	0.22 985	9.93 532	7	30	0
	4	31	9.70 568	22	9.77 044	29	0.22 956	9.93 525	8	29	56
	8	32	9.70 590	21	9.77 073	28	0.22 927	9.93 517	7	28	52
	12	33	9.70 611	22	9.77 101	29	0.22 899	9.93 510	8	27	48
	16	34	9.70 633	21	9.77 130	29	0.22 870	9.93 502	7	26	44
2	20	35	9.70 654	21	9.77 159	29	0.22 841	9.93 495	8	25	40
	24	36	9.70 675	22	9.77 188	29	0.22 812	9.93 487	7	24	36
	28	37	9.70 697	21	9.77 217	29	0.22 783	9.93 480	8	23	32
	32	38	9.70 718	21	9.77 246	29	0.22 754	9.93 472	7	22	28
	36	39	9.70 739	22	9.77 274	29	0.22 726	9.93 465	8	21	24
2	40	40	9.70 761	21	9.77 303	29	0.22 697	9.93 457	7	20	20
	44	41	9.70 782	21	9.77 332	29	0.22 668	9.93 450	8	19	16
	48	42	9.70 803	21	9.77 361	29	0.22 639	9.93 442	7	18	12
	52	43	9.70 824	22	9.77 390	29	0.22 610	9.93 435	8	17	8
	56	44	9.70 846	21	9.77 418	29	0.22 582	9.93 427	7	16	4
3	0	45	9.70 867	21	9.77 447	29	0.22 553	9.93 420	8	15	0
	4	46	9.70 888	21	9.77 476	29	0.22 524	9.93 412	7	14	56
	8	47	9.70 909	22	9.77 505	28	0.22 495	9.93 405	8	13	52
	12	48	9.70 931	21	9.77 533	29	0.22 467	9.93 397	7	12	48
	16	49	9.70 952	21	9.77 562	29	0.22 438	9.93 390	8	11	44
3	20	50	9.70 973	21	9.77 591	28	0.22 409	9.93 382	7	10	40
	24	51	9.70 994	21	9.77 619	29	0.22 381	9.93 375	8	9	36
	28	52	9.71 015	21	9.77 648	29	0.22 352	9.93 367	7	8	32
	32	53	9.71 036	22	9.77 677	29	0.22 323	9.93 360	8	7	28
	36	54	9.71 058	21	9.77 706	28	0.22 294	9.93 352	7	6	24
3	40	55	9.71 079	21	9.77 734	29	0.22 266	9.93 344	7	5	20
	44	56	9.71 100	21	9.77 763	28	0.22 237	9.93 337	8	4	16
	48	57	9.71 121	21	9.77 791	29	0.22 209	9.93 329	7	3	12
	52	58	9.71 142	21	9.77 820	29	0.22 180	9.93 322	8	2	8
	56	59	9.71 163	21	9.77 849	28	0.22 151	9.93 314	7	1	4
4	0	60	9.71 184		9.77 877		0.22 123	9.93 307		0	0
			L. Cos.	d.	L. Cotg.	e. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

$2^h$			$31^\circ$								
m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
4	0	0	9.71 184	21	9.77 877	29	0.22 123	9.98 307	8	56	0
	4	1	9.71 205	21	9.77 905	29	0.22 094	9.98 289	8	56	36
	8	2	9.71 226	21	9.77 935	29	0.22 065	9.98 261	8	56	52
	12	3	9.71 247	21	9.77 965	29	0.22 037	9.98 234	8	57	45
	16	4	9.71 268	21	9.77 992	28	0.22 008	9.98 206	8	56	44
4	20	5	9.71 289	21	9.78 020	29	0.21 980	9.98 209	8	55	49
	24	6	9.71 310	21	9.78 049	29	0.21 951	9.98 261	8	54	36
	28	7	9.71 331	21	9.78 077	28	0.21 923	9.98 253	8	53	32
	32	8	9.71 352	21	9.78 106	29	0.21 894	9.98 246	8	52	26
	36	9	9.71 373	21	9.78 135	28	0.21 865	9.98 238	8	51	24
4	40	10	9.71 393	21	9.78 163	29	0.21 837	9.98 230	7	50	20
	44	11	9.71 414	21	9.78 192	28	0.21 808	9.98 223	7	49	16
	48	12	9.71 435	21	9.78 220	28	0.21 780	9.98 215	7	48	12
	52	13	9.71 456	21	9.78 249	29	0.21 751	9.98 207	7	47	8
	56	14	9.71 477	21	9.78 277	29	0.21 723	9.98 200	7	46	4
5	0	15	9.71 498	21	9.78 305	28	0.21 694	9.98 192	8	45	55
	4	16	9.71 519	21	9.78 334	29	0.21 666	9.98 184	8	44	56
	8	17	9.71 539	21	9.78 363	28	0.21 637	9.98 177	8	43	52
	12	18	9.71 560	21	9.78 391	28	0.21 609	9.98 169	8	42	48
	16	19	9.71 581	21	9.78 419	29	0.21 581	9.98 161	8	41	44
5	20	20	9.71 602	20	9.78 448	28	0.21 552	9.98 154	8	40	40
	24	21	9.71 622	20	9.78 476	29	0.21 524	9.98 146	8	39	36
	28	22	9.71 643	21	9.78 505	28	0.21 495	9.98 138	8	38	32
	32	23	9.71 664	21	9.78 533	29	0.21 467	9.98 131	8	37	28
	36	24	9.71 685	20	9.78 562	28	0.21 438	9.98 123	8	36	24
5	40	25	9.71 705	21	9.78 590	28	0.21 410	9.98 115	7	35	20
	44	26	9.71 726	21	9.78 618	29	0.21 382	9.98 108	7	34	16
	48	27	9.71 747	21	9.78 647	29	0.21 353	9.98 100	7	33	12
	52	28	9.71 767	20	9.78 675	28	0.21 325	9.98 092	8	32	8
	56	29	9.71 788	21	9.78 704	28	0.21 296	9.98 084	8	31	4
6	0	30	9.71 809	20	9.78 732	28	0.21 268	9.98 077	8	30	54
	4	31	9.71 829	20	9.78 760	29	0.21 240	9.98 069	8	29	56
	8	32	9.71 850	21	9.78 789	29	0.21 211	9.98 061	8	28	52
	12	33	9.71 870	20	9.78 817	28	0.21 183	9.98 053	8	27	48
	16	34	9.71 891	21	9.78 845	28	0.21 155	9.98 046	8	26	44
6	20	35	9.71 911	21	9.78 874	28	0.21 126	9.98 038	8	25	58
	24	36	9.71 932	21	9.78 902	28	0.21 098	9.98 030	8	24	36
	28	37	9.71 952	21	9.78 930	29	0.21 070	9.98 022	8	23	32
	32	38	9.71 973	21	9.78 959	29	0.21 041	9.98 014	7	22	28
	36	39	9.71 994	20	9.78 987	28	0.21 013	9.98 007	8	21	24
6	40	40	9.72 014	20	9.79 015	28	0.20 985	9.92 999	8	20	53
	44	41	9.72 034	21	9.79 043	29	0.20 957	9.92 991	8	19	16
	48	42	9.72 055	20	9.79 072	28	0.20 928	9.92 983	8	18	12
	52	43	9.72 075	21	9.79 100	28	0.20 900	9.92 976	8	17	8
	56	44	9.72 096	21	9.79 128	28	0.20 872	9.92 968	8	16	4
7	0	45	9.72 116	21	9.79 156	29	0.20 844	9.92 960	8	15	58
	4	46	9.72 137	20	9.79 185	28	0.20 815	9.92 952	8	14	56
	8	47	9.72 157	20	9.79 213	28	0.20 787	9.92 944	8	13	52
	12	48	9.72 177	21	9.79 241	28	0.20 759	9.92 936	8	12	48
	16	49	9.72 198	20	9.79 269	28	0.20 731	9.92 929	8	11	44
7	20	50	9.72 218	20	9.79 297	29	0.20 703	9.92 921	8	10	52
	24	51	9.72 238	21	9.79 326	28	0.20 674	9.92 913	8	9	36
	28	52	9.72 259	21	9.79 354	28	0.20 646	9.92 905	8	8	32
	32	53	9.72 279	20	9.79 382	28	0.20 618	9.92 897	8	7	28
	36	54	9.72 299	21	9.79 410	28	0.20 590	9.92 889	8	6	24
7	40	55	9.72 320	20	9.79 438	28	0.20 562	9.92 881	7	5	20
	44	56	9.72 340	21	9.79 466	29	0.20 534	9.92 874	8	4	16
	48	57	9.72 360	21	9.79 495	28	0.20 506	9.92 866	8	3	12
	52	58	9.72 381	20	9.79 523	28	0.20 477	9.92 858	8	2	8
	56	59	9.72 401	20	9.79 551	28	0.20 449	9.92 850	8	1	4
8	0	60	9.72 421	20	9.79 579		0.20 421	9.92 842		0	52
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>			32°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
8	0	0	9.72 421		9.79 579		0.20 421	9.92 842		60	52 0
	4	1	9.72 441	20	9.79 607	28	0.20 393	9.92 834	8	59	56
	8	2	9.72 461		9.79 635	28	0.20 365	9.92 826	8	58	52
	12	3	9.72 482	21	9.79 663	28	0.20 337	9.92 818	8	57	48
	16	4	9.72 502	20	9.79 691	28	0.20 309	9.92 810	8	56	44
8	20	5	9.72 522		9.79 719		0.20 281	9.92 803	7	55	40
	24	6	9.72 542	20	9.79 747	28	0.20 253	9.92 795	8	54	36
	28	7	9.72 562	20	9.79 776	29	0.20 224	9.92 787	8	53	32
	32	8	9.72 582	20	9.79 804	28	0.20 196	9.92 779	8	52	28
	36	9	9.72 602	20	9.79 832	28	0.20 168	9.92 771	8	51	24
8	40	10	9.72 622		9.79 860		0.20 140	9.92 763		50	20
	44	11	9.72 643	21	9.79 888	28	0.20 112	9.92 755	8	49	16
	48	12	9.72 663	20	9.79 916	28	0.20 084	9.92 747	8	48	12
	52	13	9.72 683	20	9.79 944	28	0.20 056	9.92 739	8	47	8
	56	14	9.72 703	20	9.79 972	28	0.20 028	9.92 731	8	46	4
9	0	15	9.72 723		9.80 000		0.20 000	9.92 723		45	0
	4	16	9.72 743	20	9.80 028	28	0.19 972	9.92 715	8	44	56
	8	17	9.72 763	20	9.80 056	28	0.19 944	9.92 707	8	43	52
	12	18	9.72 783	20	9.80 084	28	0.19 916	9.92 699	8	42	48
	16	19	9.72 803	20	9.80 112	28	0.19 888	9.92 691	8	41	44
9	20	20	9.72 823		9.80 140		0.19 860	9.92 683		40	40
	24	21	9.72 843	20	9.80 168	28	0.19 832	9.92 675	8	39	36
	28	22	9.72 863	20	9.80 196	27	0.19 805	9.92 667	8	38	32
	32	23	9.72 883	20	9.80 223	28	0.19 777	9.92 659	8	37	28
	36	24	9.72 902	19	9.80 251	28	0.19 749	9.92 651	8	36	24
9	40	25	9.72 922		9.80 279		0.19 721	9.92 643		35	20
	44	26	9.72 942	20	9.80 307	28	0.19 693	9.92 635	8	34	16
	48	27	9.72 962	20	9.80 335	28	0.19 665	9.92 627	8	33	12
	52	28	9.72 982	20	9.80 363	28	0.19 637	9.92 619	8	32	8
	56	29	9.73 002	20	9.80 391	28	0.19 609	9.92 611	8	31	4
10	0	30	9.73 022		9.80 419		0.19 581	9.92 603		30	0
	4	31	9.73 041	19	9.80 447	28	0.19 553	9.92 595	8	29	56
	8	32	9.73 061	20	9.80 474	27	0.19 526	9.92 587	8	28	52
	12	33	9.73 081	20	9.80 502	28	0.19 498	9.92 579	8	27	48
	16	34	9.73 101	20	9.80 530	28	0.19 470	9.92 571	8	26	44
10	20	35	9.73 121		9.80 558		0.19 442	9.92 563		25	40
	24	36	9.73 140	19	9.80 586	28	0.19 414	9.92 555	8	24	36
	28	37	9.73 160	20	9.80 614	28	0.19 386	9.92 546	9	23	32
	32	38	9.73 180	20	9.80 642	28	0.19 358	9.92 538	8	22	28
	36	39	9.73 200	19	9.80 669	27	0.19 331	9.92 530	8	21	24
10	40	40	9.73 219		9.80 697		0.19 303	9.92 522		20	20
	44	41	9.73 239	20	9.80 725	28	0.19 275	9.92 514	8	19	16
	48	42	9.73 259	20	9.80 753	28	0.19 247	9.92 506	8	18	12
	52	43	9.73 278	19	9.80 781	28	0.19 219	9.92 498	8	17	8
	56	44	9.73 298	20	9.80 808	27	0.19 192	9.92 490	8	16	4
11	0	45	9.73 318		9.80 836		0.19 164	9.92 482		15	0
	4	46	9.73 337	19	9.80 864	28	0.19 136	9.92 473	9	14	56
	8	47	9.73 357	20	9.80 892	28	0.19 108	9.92 465	8	13	52
	12	48	9.73 377	20	9.80 919	27	0.19 081	9.92 457	8	12	48
	16	49	9.73 396	19	9.80 947	28	0.19 053	9.92 449	8	11	44
11	20	50	9.73 416		9.80 975		0.19 025	9.92 441		10	40
	24	51	9.73 435	19	9.81 003	28	0.18 997	9.92 433	8	9	36
	28	52	9.73 455	20	9.81 030	27	0.18 970	9.92 425	8	8	32
	32	53	9.73 474	19	9.81 058	28	0.18 942	9.92 416	9	7	28
	36	54	9.73 494	20	9.81 086	28	0.18 914	9.92 408	8	6	24
11	40	55	9.73 513		9.81 113		0.18 887	9.92 400		5	20
	44	56	9.73 533	20	9.81 141	28	0.18 859	9.92 392	8	4	16
	48	57	9.73 552	19	9.81 169	28	0.18 831	9.92 384	8	3	12
	52	58	9.73 572	20	9.81 196	27	0.18 804	9.92 376	8	2	8
	56	59	9.73 591	19	9.81 224	28	0.18 776	9.92 367	9	1	4
12	0	60	9.73 611		9.81 252		0.18 748	9.92 359		0	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.

TABLE 21. — Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>		33°									
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
12	0	0	9.78 611		9.81 252		0.18 748	9.92 359		60	48 0
	4	1	9.78 630	19	9.81 279	27	0.18 721	9.92 351	8	59	56
	8	2	9.78 650	20	9.81 307	28	0.18 693	9.92 343	8	58	52
	12	3	9.78 669	19	9.81 335	28	0.18 665	9.92 335	8	57	48
	16	4	9.78 689	20	9.81 362	27	0.18 638	9.92 326	9	56	44
				19		28			8		
12	20	5	9.78 708		9.81 390		0.18 610	9.92 318		55	47 40
	24	6	9.78 727	19	9.81 418	28	0.18 582	9.92 310	8	54	36
	28	7	9.78 747	20	9.81 445	27	0.18 555	9.92 302	8	53	32
	32	8	9.78 766	19	9.81 473	28	0.18 527	9.92 293	9	52	28
	36	9	9.78 785	19	9.81 500	27	0.18 500	9.92 285	8	51	24
				20		28			8		
12	40	10	9.78 805		9.81 528		0.18 472	9.92 277		50	47 20
	44	11	9.78 824	19	9.81 556	28	0.18 444	9.92 269	8	49	16
	48	12	9.78 843	19	9.81 583	27	0.18 417	9.92 260	9	48	12
	52	13	9.78 863	20	9.81 611	28	0.18 389	9.92 252	8	47	8
	56	14	9.78 882	19	9.81 638	27	0.18 362	9.92 244	8	46	4
				19		28			9		
13	0	15	9.78 901		9.81 666		0.18 334	9.92 235		45	47 0
	4	16	9.78 921	20	9.81 693	27	0.18 307	9.92 227	8	44	56
	8	17	9.78 940	19	9.81 721	28	0.18 279	9.92 219	8	43	52
	12	18	9.78 959	19	9.81 748	27	0.18 252	9.92 211	8	42	48
	16	19	9.78 978	19	9.81 776	28	0.18 224	9.92 202	9	41	44
				20		27			8		
13	20	20	9.78 997		9.81 803		0.18 197	9.92 194		40	46 40
	24	21	9.74 017	20	9.81 831	28	0.18 169	9.92 186	8	39	36
	28	22	9.74 036	19	9.81 858	27	0.18 142	9.92 177	9	38	32
	32	23	9.74 055	19	9.81 886	28	0.18 114	9.92 169	8	37	28
	36	24	9.74 074	19	9.81 913	27	0.18 087	9.92 161	8	36	24
				20		28			9		
13	40	25	9.74 093		9.81 941		0.18 059	9.92 152		35	46 20
	44	26	9.74 113	20	9.81 968	27	0.18 032	9.92 144	8	34	16
	48	27	9.74 132	19	9.81 996	28	0.18 004	9.92 136	8	33	12
	52	28	9.74 151	19	9.82 023	27	0.17 977	9.92 127	9	32	8
	56	29	9.74 170	19	9.82 051	28	0.17 949	9.92 119	8	31	4
				20		27			8		
14	0	30	9.74 189		9.82 078		0.17 922	9.92 111		30	46 0
	4	31	9.74 208	19	9.82 106	28	0.17 894	9.92 102	9	29	56
	8	32	9.74 227	19	9.82 133	27	0.17 867	9.92 094	8	28	52
	12	33	9.74 246	19	9.82 161	28	0.17 839	9.92 086	8	27	48
	16	34	9.74 265	19	9.82 188	27	0.17 812	9.92 077	9	26	44
				20		27			8		
14	20	35	9.74 284		9.82 215		0.17 785	9.92 069		25	45 40
	24	36	9.74 303	19	9.82 243	28	0.17 757	9.92 060	9	24	36
	28	37	9.74 322	19	9.82 270	27	0.17 730	9.92 052	8	23	32
	32	38	9.74 341	19	9.82 298	28	0.17 702	9.92 044	8	22	28
	36	39	9.74 360	19	9.82 325	27	0.17 675	9.92 035	9	21	24
				20		27			8		
14	40	40	9.74 379		9.82 352		0.17 648	9.92 027		20	45 20
	44	41	9.74 398	19	9.82 380	28	0.17 620	9.92 018	9	19	16
	48	42	9.74 417	19	9.82 407	27	0.17 593	9.92 010	8	18	12
	52	43	9.74 436	19	9.82 435	28	0.17 565	9.92 002	8	17	8
	56	44	9.74 455	19	9.82 462	27	0.17 538	9.91 993	9	16	4
				20		27			8		
15	0	45	9.74 474		9.82 489		0.17 511	9.91 985		15	45 0
	4	46	9.74 493	19	9.82 517	28	0.17 483	9.91 976	9	14	56
	8	47	9.74 512	19	9.82 544	27	0.17 456	9.91 968	8	13	52
	12	48	9.74 531	19	9.82 571	27	0.17 429	9.91 959	9	12	48
	16	49	9.74 549	18	9.82 599	28	0.17 401	9.91 951	8	11	44
				19		27			9		
15	20	50	9.74 568		9.82 626		0.17 374	9.91 942		10	44 40
	24	51	9.74 587	19	9.82 653	27	0.17 347	9.91 934	8	9	36
	28	52	9.74 606	19	9.82 681	28	0.17 319	9.91 925	9	8	32
	32	53	9.74 625	19	9.82 708	27	0.17 292	9.91 917	8	7	28
	36	54	9.74 644	19	9.82 735	27	0.17 265	9.91 908	8	6	24
				18		27			8		
15	40	55	9.74 662		9.82 762		0.17 238	9.91 900		5	44 20
	44	56	9.74 681	19	9.82 790	28	0.17 210	9.91 891	9	4	16
	48	57	9.74 700	19	9.82 817	27	0.17 183	9.91 883	8	3	12
	52	58	9.74 719	19	9.82 844	27	0.17 156	9.91 874	9	2	8
	56	59	9.74 737	18	9.82 871	27	0.17 129	9.91 866	8	1	4
				19		28			9		
16	0	60	9.74 756		9.82 899		0.17 101	9.91 857		0	44 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

$2^h$				$34^\circ$							
m.	s.	$^{\circ}$	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
16	0	0	9.74 756		9.82 899		0.17 101	9.91 857		60	44 0
	4	1	9.74 775	19	9.82 926	27	0.17 074	9.91 849	8	59	56
	8	2	9.74 794	19	9.82 953	27	0.17 047	9.91 840	9	58	52
	12	3	9.74 812	18	9.82 980	27	0.17 020	9.91 832	8	57	48
	16	4	9.74 831	19	9.83 008	28	0.16 992	9.91 823	9	56	44
				19		27			8		
16	20	5	9.74 850		9.83 035		0.16 965	9.91 815		55	43 40
	24	6	9.74 868	18	9.83 062	27	0.16 938	9.91 806	9	54	36
	28	7	9.74 887	19	9.83 089	27	0.16 911	9.91 798	8	53	32
	32	8	9.74 906	19	9.83 117	28	0.16 883	9.91 789	9	52	28
	36	9	9.74 924	18	9.83 144	27	0.16 856	9.91 781	8	51	24
				19		27			9		
16	40	10	9.74 943		9.83 171		0.16 829	9.91 772		50	43 20
	44	11	9.74 961	18	9.83 198	27	0.16 802	9.91 763	9	49	16
	48	12	9.74 980	19	9.83 225	27	0.16 775	9.91 755	8	48	12
	52	13	9.74 999	19	9.83 252	27	0.16 748	9.91 746	9	47	8
	56	14	9.75 017	18	9.83 280	28	0.16 720	9.91 738	8	46	4
				19		27			9		
17	0	15	9.75 036		9.83 307		0.16 693	9.91 729		45	43 0
	4	16	9.75 054	18	9.83 334	27	0.16 666	9.91 720	9	44	56
	8	17	9.75 073	19	9.83 361	27	0.16 639	9.91 712	8	43	52
	12	18	9.75 091	19	9.83 388	27	0.16 612	9.91 703	9	42	48
	16	19	9.75 110	18	9.83 415	27	0.16 585	9.91 695	8	41	44
				19		27			9		
17	20	20	9.75 128		9.83 442		0.16 558	9.91 686		40	42 40
	24	21	9.75 147	19	9.83 470	28	0.16 530	9.91 677	9	39	36
	28	22	9.75 165	18	9.83 497	27	0.16 503	9.91 669	8	38	32
	32	23	9.75 184	19	9.83 524	27	0.16 476	9.91 660	9	37	28
	36	24	9.75 202	18	9.83 551	27	0.16 449	9.91 651	8	36	24
				19		27			9		
17	40	25	9.75 221		9.83 578		0.16 422	9.91 643		35	42 20
	44	26	9.75 239	18	9.83 605	27	0.16 395	9.91 634	9	34	16
	48	27	9.75 258	19	9.83 632	27	0.16 368	9.91 625	9	33	12
	52	28	9.75 276	18	9.83 659	27	0.16 341	9.91 617	8	32	8
	56	29	9.75 294	19	9.83 686	27	0.16 314	9.91 608	9	31	4
				19		27			9		
18	0	30	9.75 313		9.83 713		0.16 287	9.91 599		30	42 0
	4	31	9.75 331	18	9.83 740	27	0.16 260	9.91 591	8	29	56
	8	32	9.75 350	19	9.83 768	28	0.16 232	9.91 582	9	28	52
	12	33	9.75 368	18	9.83 795	27	0.16 205	9.91 573	9	27	48
	16	34	9.75 386	18	9.83 822	27	0.16 178	9.91 565	8	26	44
				19		27			9		
18	20	35	9.75 405		9.83 849		0.16 151	9.91 556		25	41 40
	24	36	9.75 423	18	9.83 876	27	0.16 124	9.91 547	9	24	36
	28	37	9.75 441	18	9.83 903	27	0.16 097	9.91 538	9	23	32
	32	38	9.75 459	18	9.83 930	27	0.16 070	9.91 530	8	22	28
	36	39	9.75 478	19	9.83 957	27	0.16 043	9.91 521	9	21	24
				18		27			9		
18	40	40	9.75 496		9.83 984		0.16 016	9.91 512		20	41 20
	44	41	9.75 514	18	9.84 011	27	0.15 989	9.91 504	8	19	16
	48	42	9.75 533	19	9.84 038	27	0.15 962	9.91 495	9	18	12
	52	43	9.75 551	18	9.84 065	27	0.15 935	9.91 486	9	17	8
	56	44	9.75 569	18	9.84 092	27	0.15 908	9.91 477	9	16	4
				18		27			8		
19	0	45	9.75 587		9.84 119		0.15 881	9.91 469		15	41 0
	4	46	9.75 605	18	9.84 146	27	0.15 854	9.91 460	9	14	56
	8	47	9.75 624	19	9.84 173	27	0.15 827	9.91 451	9	13	52
	12	48	9.75 642	18	9.84 200	27	0.15 800	9.91 442	9	12	48
	16	49	9.75 660	18	9.84 227	27	0.15 773	9.91 433	9	11	44
				18		27			8		
19	20	50	9.75 678		9.84 254		0.15 746	9.91 425		10	40 40
	24	51	9.75 696	18	9.84 280	26	0.15 720	9.91 416	9	9	36
	28	52	9.75 714	18	9.84 307	27	0.15 693	9.91 407	9	8	32
	32	53	9.75 733	19	9.84 334	27	0.15 666	9.91 398	9	7	28
	36	54	9.75 751	18	9.84 361	27	0.15 639	9.91 389	9	6	24
				18		27			8		
19	40	55	9.75 769		9.84 388		0.15 612	9.91 381		5	40 20
	44	56	9.75 787	18	9.84 415	27	0.15 585	9.91 372	9	4	16
	48	57	9.75 805	18	9.84 442	27	0.15 558	9.91 363	9	3	12
	52	58	9.75 823	18	9.84 469	27	0.15 531	9.91 354	9	2	8
	56	59	9.75 841	18	9.84 496	27	0.15 504	9.91 345	9	1	4
				18		27			9		
20	0	60	9.75 859		9.84 523		0.15 477	9.91 336		0	40 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2°		35°									
m.	s.	L. Sin.	d.	L. Tang.	e. d.	L. Cotg.	L. Cos.	d.			
20	0	0	9.75 859		9.84 523	27	0.15 477	9.91 336	8	60	40 0
	4	1	9.75 877	18	9.84 550	27	0.15 450	9.91 328	9	59	56
	8	2	9.75 895	18	9.84 576	26	0.15 424	9.91 319	9	58	52
	12	3	9.75 913	18	9.84 603	27	0.15 397	9.91 310	9	57	48
	16	4	9.75 931	18	9.84 630	27	0.15 370	9.91 301	9	56	44
				18		27			9		
20	20	5	9.75 949		9.84 657	27	0.15 343	9.91 292	9	55	39 40
	24	6	9.75 967	18	9.84 684	27	0.15 316	9.91 283	9	54	36
	28	7	9.75 985	18	9.84 711	27	0.15 289	9.91 274	9	53	32
	32	8	9.76 003	18	9.84 738	27	0.15 262	9.91 265	8	52	28
	36	9	9.76 021	18	9.84 764	26	0.15 235	9.91 257	9	51	24
				18		27			9		
20	40	10	9.76 039		9.84 791	27	0.15 209	9.91 248	9	50	39 20
	44	11	9.76 057	18	9.84 818	27	0.15 182	9.91 239	9	49	16
	48	12	9.76 075	18	9.84 845	27	0.15 155	9.91 230	9	48	12
	52	13	9.76 093	18	9.84 872	27	0.15 128	9.91 221	9	47	8
	56	14	9.76 111	18	9.84 899	27	0.15 101	9.91 212	9	46	4
				18		26			9		
21	0	15	9.76 129		9.84 925	27	0.15 075	9.91 203	9	45	39 0
	4	16	9.76 146	17	9.84 952	27	0.15 048	9.91 194	9	44	56
	8	17	9.76 164	18	9.84 979	27	0.15 021	9.91 185	9	43	52
	12	18	9.76 182	18	9.85 006	27	0.14 994	9.91 176	9	42	48
	16	19	9.76 200	18	9.85 033	27	0.14 967	9.91 167	9	41	44
				18		26			9		
21	20	20	9.76 218		9.85 059	27	0.14 941	9.91 158	9	40	38 40
	24	21	9.76 236	18	9.85 086	27	0.14 914	9.91 149	9	39	36
	28	22	9.76 253	17	9.85 113	27	0.14 887	9.91 141	8	38	32
	32	23	9.76 271	18	9.85 140	27	0.14 860	9.91 132	9	37	28
	36	24	9.76 289	18	9.85 166	26	0.14 834	9.91 123	9	36	24
				18		27			9		
21	40	25	9.76 307		9.85 193	27	0.14 807	9.91 114	9	35	38 20
	44	26	9.76 324	17	9.85 220	27	0.14 780	9.91 105	9	34	16
	48	27	9.76 342	18	9.85 247	27	0.14 753	9.91 096	9	33	12
	52	28	9.76 360	18	9.85 273	26	0.14 727	9.91 087	9	32	8
	56	29	9.76 378	18	9.85 300	27	0.14 700	9.91 078	9	31	4
				17		27			9		
22	0	30	9.76 395		9.85 327	27	0.14 673	9.91 069	9	30	38 0
	4	31	9.76 413	18	9.85 354	27	0.14 646	9.91 060	9	29	56
	8	32	9.76 431	18	9.85 380	26	0.14 620	9.91 051	9	28	52
	12	33	9.76 448	17	9.85 407	27	0.14 593	9.91 042	9	27	48
	16	34	9.76 466	18	9.85 434	27	0.14 566	9.91 033	9	26	44
				18		26			10		
22	20	35	9.76 484		9.85 460	27	0.14 540	9.91 023	9	25	37 40
	24	36	9.76 501	17	9.85 487	27	0.14 513	9.91 014	9	24	36
	28	37	9.76 519	18	9.85 514	27	0.14 486	9.91 005	9	23	32
	32	38	9.76 537	18	9.85 540	26	0.14 460	9.90 996	9	22	28
	36	39	9.76 554	17	9.85 567	27	0.14 433	9.90 987	9	21	24
				18		27			9		
22	40	40	9.76 572		9.85 594	27	0.14 406	9.90 978	9	20	37 20
	44	41	9.76 590	18	9.85 620	26	0.14 380	9.90 969	9	19	16
	48	42	9.76 607	17	9.85 647	27	0.14 353	9.90 960	9	18	12
	52	43	9.76 625	18	9.85 674	27	0.14 326	9.90 951	9	17	8
	56	44	9.76 642	17	9.85 700	26	0.14 300	9.90 942	9	16	4
				18		27			9		
23	0	45	9.76 660		9.85 727	27	0.14 273	9.90 933	9	15	37 0
	4	46	9.76 677	17	9.85 754	27	0.14 246	9.90 924	9	14	56
	8	47	9.76 695	18	9.85 780	26	0.14 220	9.90 915	9	13	52
	12	48	9.76 712	17	9.85 807	27	0.14 193	9.90 906	9	12	48
	16	49	9.76 730	18	9.85 834	27	0.14 166	9.90 896	10	11	44
				17		26			9		
23	20	50	9.76 747		9.85 860	27	0.14 140	9.90 887	9	10	36 40
	24	51	9.76 765	18	9.85 887	27	0.14 113	9.90 878	9	9	36
	28	52	9.76 782	17	9.85 913	26	0.14 087	9.90 869	9	8	32
	32	53	9.76 800	18	9.85 940	27	0.14 060	9.90 860	9	7	28
	36	54	9.76 817	17	9.85 967	27	0.14 033	9.90 851	9	6	24
				18		26			9		
23	40	55	9.76 835		9.85 993	27	0.14 007	9.90 842	9	5	36 20
	44	56	9.76 852	17	9.86 020	27	0.13 980	9.90 832	10	4	16
	48	57	9.76 870	18	9.86 046	26	0.13 954	9.90 823	9	3	12
	52	58	9.76 887	17	9.86 073	27	0.13 927	9.90 814	9	2	8
	56	59	9.76 904	17	9.86 100	27	0.13 900	9.90 805	9	1	4
				18		26			9		
24	0	60	9.76 922		9.86 126	27	0.13 874	9.90 796	9	0	36 0
			L. Cos.	d.	L. Cotg.	e. d.	L. Tang.	L. Sin.	d.		m. s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

 $2^h$  $36^\circ$ 

m. s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.				
24	0	0	9.76 922	17	9.86 126	27	0.13 874	9.90 796	9	60	36	0
	4	1	9.76 939	18	9.86 153	26	0.13 847	9.90 787	10	59	59	56
	8	2	9.76 957	17	9.86 179	27	0.13 821	9.90 777	9	58	58	52
	12	3	9.76 974	17	9.86 206	26	0.13 794	9.90 768	9	57	57	48
	16	4	9.76 991	18	9.86 232	27	0.13 768	9.90 759	9	56	56	44
24	20	5	9.77 009	17	9.86 259	26	0.13 741	9.90 750	9	55	55	40
	24	6	9.77 026	17	9.86 285	27	0.13 715	9.90 741	10	54	54	36
	28	7	9.77 043	18	9.86 312	26	0.13 688	9.90 731	9	53	53	32
	32	8	9.77 061	17	9.86 338	27	0.13 662	9.90 722	9	52	52	28
	36	9	9.77 078	17	9.86 365	27	0.13 635	9.90 713	9	51	51	24
24	40	10	9.77 095	17	9.86 392	26	0.13 608	9.90 704	10	50	50	20
	44	11	9.77 112	17	9.86 418	27	0.13 582	9.90 694	9	49	49	16
	48	12	9.77 130	18	9.86 445	27	0.13 555	9.90 685	9	48	48	12
	52	13	9.77 147	17	9.86 471	26	0.13 529	9.90 676	9	47	47	8
	56	14	9.77 164	17	9.86 498	27	0.13 502	9.90 667	10	46	46	4
25	0	15	9.77 181	18	9.86 524	27	0.13 476	9.90 657	9	45	45	0
	4	16	9.77 199	17	9.86 551	26	0.13 449	9.90 648	9	44	44	56
	8	17	9.77 216	17	9.86 577	26	0.13 423	9.90 639	9	43	43	52
	12	18	9.77 233	17	9.86 603	27	0.13 397	9.90 630	9	42	42	48
	16	19	9.77 250	18	9.86 630	26	0.13 370	9.90 620	10	41	41	44
25	20	20	9.77 268	17	9.86 656	27	0.13 344	9.90 611	9	40	40	40
	24	21	9.77 285	17	9.86 683	26	0.13 317	9.90 602	10	39	39	36
	28	22	9.77 302	17	9.86 709	27	0.13 291	9.90 592	9	38	38	32
	32	23	9.77 319	17	9.86 736	26	0.13 264	9.90 583	9	37	37	28
	36	24	9.77 336	17	9.86 762	27	0.13 238	9.90 574	9	36	36	24
25	40	25	9.77 353	17	9.86 789	26	0.13 211	9.90 565	10	35	35	20
	44	26	9.77 370	17	9.86 815	27	0.13 185	9.90 555	9	34	34	16
	48	27	9.77 387	17	9.86 842	26	0.13 158	9.90 546	9	33	33	12
	52	28	9.77 405	18	9.86 868	26	0.13 132	9.90 537	10	32	32	8
	56	29	9.77 422	17	9.86 894	27	0.13 106	9.90 527	9	31	31	4
26	0	30	9.77 439	17	9.86 921	26	0.13 079	9.90 518	9	30	30	0
	4	31	9.77 456	17	9.86 947	27	0.13 053	9.90 509	9	29	29	56
	8	32	9.77 473	17	9.86 974	27	0.13 026	9.90 499	10	28	28	52
	12	33	9.77 490	17	9.87 000	26	0.13 000	9.90 490	9	27	27	48
	16	34	9.77 507	17	9.87 027	26	0.12 973	9.90 480	10	26	26	44
26	20	35	9.77 524	17	9.87 053	26	0.12 947	9.90 471	9	25	25	40
	24	36	9.77 541	17	9.87 079	27	0.12 921	9.90 462	10	24	24	36
	28	37	9.77 558	17	9.87 106	26	0.12 894	9.90 442	9	23	23	32
	32	38	9.77 575	17	9.87 132	26	0.12 868	9.90 443	9	22	22	28
	36	39	9.77 592	17	9.87 158	27	0.12 842	9.90 434	10	21	21	24
26	40	40	9.77 609	17	9.87 185	26	0.12 815	9.90 424	9	20	20	20
	44	41	9.77 626	17	9.87 211	27	0.12 789	9.90 415	10	19	19	16
	48	42	9.77 643	17	9.87 238	26	0.12 762	9.90 405	9	18	18	12
	52	43	9.77 660	17	9.87 264	26	0.12 736	9.90 396	9	17	17	8
	56	44	9.77 677	17	9.87 290	27	0.12 710	9.90 386	10	16	16	4
27	0	45	9.77 694	17	9.87 317	26	0.12 683	9.90 377	9	15	15	0
	4	46	9.77 711	17	9.87 343	26	0.12 657	9.90 368	9	14	14	56
	8	47	9.77 728	16	9.87 369	26	0.12 631	9.90 358	10	13	13	52
	12	48	9.77 744	17	9.87 396	27	0.12 604	9.90 349	9	12	12	48
	16	49	9.77 761	17	9.87 422	26	0.12 578	9.90 339	10	11	11	44
27	20	50	9.77 778	17	9.87 448	27	0.12 552	9.90 330	10	10	10	40
	24	51	9.77 795	17	9.87 475	26	0.12 525	9.90 320	9	9	9	36
	28	52	9.77 812	17	9.87 501	26	0.12 499	9.90 311	10	8	8	32
	32	53	9.77 829	17	9.87 527	27	0.12 473	9.90 301	9	7	7	28
	36	54	9.77 846	16	9.87 554	26	0.12 446	9.90 292	10	6	6	24
27	40	55	9.77 862	17	9.87 580	26	0.12 420	9.90 282	9	5	5	20
	44	56	9.77 879	17	9.87 606	27	0.12 394	9.90 273	10	4	4	16
	48	57	9.77 896	17	9.87 633	26	0.12 367	9.90 263	9	3	3	12
	52	58	9.77 913	17	9.87 659	26	0.12 341	9.90 254	10	2	2	8
	56	59	9.77 930	16	9.87 685	26	0.12 315	9.90 244	9	1	1	4
28	0	60	9.77 946		9.87 711		0.12 289	9.90 235		0	0	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.	

 $53^\circ$  $3^h$



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2<sup>h</sup>

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m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
28	0	0	9.77 946		9.87 711		0.12 289	9.90 235		60	32 0
	4	1	9.77 963	17	9.87 738	27	0.12 262	9.90 225	10	53	56
	8	2	9.77 980	17	9.87 764	26	0.12 236	9.90 216	10	58	52
	12	3	9.77 997	17	9.87 790	26	0.12 210	9.90 206	9	57	48
	16	4	9.78 013	17	9.87 817	26	0.12 183	9.90 197	10	56	44
28	20	5	9.78 030		9.87 843		0.12 157	9.90 187		55	31 40
	24	6	9.78 047	17	9.87 869	26	0.12 131	9.90 178	9	54	36
	28	7	9.78 063	16	9.87 895	26	0.12 105	9.90 168	10	53	32
	32	8	9.78 080	17	9.87 922	27	0.12 078	9.90 159	9	52	28
	36	9	9.78 097	17	9.87 948	26	0.12 052	9.90 149	10	51	24
				16		26			10		
28	40	10	9.78 113		9.87 974		0.12 026	9.90 139		50	31 20
	44	11	9.78 130	17	9.88 000	26	0.12 000	9.90 130	9	49	16
	48	12	9.78 147	17	9.88 027	27	0.11 973	9.90 120	10	48	12
	52	13	9.78 163	16	9.88 053	26	0.11 947	9.90 111	9	47	8
	56	14	9.78 180	17	9.88 079	26	0.11 921	9.90 101	10	46	4
				17		26			10		
29	0	15	9.78 197		9.88 105		0.11 895	9.90 091		45	31 0
	4	16	9.78 213	16	9.88 131	26	0.11 869	9.90 082	9	44	56
	8	17	9.78 230	17	9.88 158	27	0.11 842	9.90 072	10	43	52
	12	18	9.78 246	16	9.88 184	26	0.11 816	9.90 063	9	42	48
	16	19	9.78 263	17	9.88 210	26	0.11 790	9.90 053	10	41	44
				17		26			10		
29	20	20	9.78 280		9.88 236		0.11 764	9.90 043		40	30 40
	24	21	9.78 296	16	9.88 262	26	0.11 738	9.90 034	9	39	36
	28	22	9.78 313	17	9.88 289	27	0.11 711	9.90 024	10	38	32
	32	23	9.78 329	16	9.88 315	26	0.11 685	9.90 014	9	37	28
	36	24	9.78 346	17	9.88 341	26	0.11 659	9.90 005	10	36	24
				16		26			10		
29	40	25	9.78 362		9.88 367		0.11 633	9.89 995		35	30 20
	44	26	9.78 379	17	9.88 393	26	0.11 607	9.89 985	10	34	16
	48	27	9.78 395	16	9.88 420	27	0.11 580	9.89 976	9	33	12
	52	28	9.78 412	17	9.88 446	26	0.11 554	9.89 966	10	32	8
	56	29	9.78 428	16	9.88 472	26	0.11 528	9.89 956	9	31	4
				17		26			9		
30	0	30	9.78 445		9.88 498		0.11 502	9.89 947		30	30 0
	4	31	9.78 461	16	9.88 524	26	0.11 476	9.89 937	10	29	56
	8	32	9.78 478	17	9.88 550	27	0.11 450	9.89 927	9	28	52
	12	33	9.78 494	16	9.88 577	26	0.11 423	9.89 918	10	27	48
	16	34	9.78 510	17	9.88 603	26	0.11 397	9.89 908	9	26	44
				17		26			10		
30	20	35	9.78 527		9.88 629		0.11 371	9.89 898		25	29 40
	24	36	9.78 543	16	9.88 655	26	0.11 345	9.89 888	10	24	36
	28	37	9.78 560	17	9.88 681	26	0.11 319	9.89 879	9	23	32
	32	38	9.78 576	16	9.88 707	26	0.11 293	9.89 869	10	22	28
	36	39	9.78 592	17	9.88 733	26	0.11 267	9.89 859	9	21	24
				17		26			10		
30	40	40	9.78 609		9.88 759		0.11 241	9.89 849		20	29 20
	44	41	9.78 625	16	9.88 786	27	0.11 214	9.89 840	9	19	16
	48	42	9.78 642	17	9.88 812	26	0.11 188	9.89 830	10	18	12
	52	43	9.78 658	16	9.88 838	26	0.11 162	9.89 820	9	17	8
	56	44	9.78 674	17	9.88 864	26	0.11 136	9.89 810	10	16	4
				17		26			9		
31	0	45	9.78 691		9.88 890		0.11 110	9.89 801		15	29 0
	4	46	9.78 707	16	9.88 916	26	0.11 084	9.89 791	10	14	56
	8	47	9.78 723	17	9.88 942	26	0.11 058	9.89 781	9	13	52
	12	48	9.78 739	16	9.88 968	26	0.11 032	9.89 771	10	12	48
	16	49	9.78 756	17	9.88 994	26	0.11 006	9.89 761	9	11	44
				16		26			10		
31	20	50	9.78 772		9.89 020		0.10 980	9.89 752		10	28 40
	24	51	9.78 788	16	9.89 046	26	0.10 954	9.89 742	9	9	36
	28	52	9.78 805	17	9.89 073	27	0.10 927	9.89 732	10	8	32
	32	53	9.78 821	16	9.89 099	26	0.10 901	9.89 722	9	7	28
	36	54	9.78 837	17	9.89 125	26	0.10 875	9.89 712	10	6	24
				16		26			9		
31	40	55	9.78 853		9.89 151		0.10 849	9.89 702		5	28 20
	44	56	9.78 869	17	9.89 177	26	0.10 823	9.89 693	10	4	16
	48	57	9.78 886	16	9.89 203	26	0.10 797	9.89 683	9	3	12
	52	58	9.78 902	17	9.89 229	26	0.10 771	9.89 673	10	2	8
	56	59	9.78 918	16	9.89 255	26	0.10 745	9.89 663	9	1	4
				16		26			10		
32	0	60	9.78 934		9.89 281		0.10 719	9.89 653		0	28 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.

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3<sup>h</sup>

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

$2^h$		$38^\circ$											
min.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.				
32	0	0	9.78 934		9.89 281		0.10 719	9.89 653		60	28	0	
	4	1	9.78 950	16	9.89 307	26	0.10 693	9.89 643	10	59		56	
	8	2	9.78 967	17	9.89 333	26	0.10 667	9.89 633	10	58		52	
	12	3	9.78 983	16	9.89 359	26	0.10 641	9.89 624	9	57		48	
	16	4	9.78 999	16	9.89 385	26	0.10 615	9.89 614	10	56		44	
				16		26			10				
32	20	5	9.79 015		9.89 411		0.10 589	9.89 604		55	27	40	
	24	6	9.79 031	16	9.89 437	26	0.10 563	9.89 594	10	54		36	
	28	7	9.79 047	16	9.89 463	26	0.10 537	9.89 584	10	53		32	
	32	8	9.79 063	16	9.89 489	26	0.10 511	9.89 574	10	52		28	
	36	9	9.79 079	16	9.89 515	26	0.10 485	9.89 564	10	51		24	
				16		26			10				
32	40	10	9.79 095		9.89 541		0.10 459	9.89 554		50	27	20	
	44	11	9.79 111	16	9.89 567	26	0.10 433	9.89 544	10	49		16	
	48	12	9.79 128	17	9.89 593	26	0.10 407	9.89 534	10	48		12	
	52	13	9.79 144	16	9.89 619	26	0.10 381	9.89 524	10	47		8	
	56	14	9.79 160	16	9.89 645	26	0.10 355	9.89 514	10	46		4	
				16		26			10				
33	0	15	9.79 176		9.89 671		0.10 329	9.89 504		45	27	0	
	4	16	9.79 192	16	9.89 697	26	0.10 303	9.89 495	9	44		56	
	8	17	9.79 208	16	9.89 723	26	0.10 277	9.89 485	10	43		52	
	12	18	9.79 224	16	9.89 749	26	0.10 251	9.89 475	10	42		48	
	16	19	9.79 240	16	9.89 775	26	0.10 225	9.89 465	10	41		44	
				16		26			10				
33	20	20	9.79 256		9.89 801		0.10 199	9.89 455		40	26	40	
	24	21	9.79 272	16	9.89 827	26	0.10 173	9.89 445	10	39		36	
	28	22	9.79 288	16	9.89 853	26	0.10 147	9.89 435	10	38		32	
	32	23	9.79 304	16	9.89 879	26	0.10 121	9.89 425	10	37		28	
	36	24	9.79 319	15	9.89 905	26	0.10 095	9.89 415	10	36		24	
				16		26			10				
33	40	25	9.79 335		9.89 931		0.10 069	9.89 405		35	26	20	
	44	26	9.79 351	16	9.89 957	26	0.10 043	9.89 395	10	34		16	
	48	27	9.79 367	16	9.89 983	26	0.10 017	9.89 385	10	33		12	
	52	28	9.79 383	16	9.90 009	26	0.09 991	9.89 375	10	32		8	
	56	29	9.79 399	16	9.90 035	26	0.09 965	9.89 364	11	31		4	
				16		26			10				
34	0	30	9.79 415		9.90 061		0.09 939	9.89 354		30	26	0	
	4	31	9.79 431	16	9.90 086	25	0.09 914	9.89 344	10	29		56	
	8	32	9.79 447	16	9.90 112	26	0.09 888	9.89 334	10	28		52	
	12	33	9.79 463	16	9.90 138	26	0.09 862	9.89 324	10	27		48	
	16	34	9.79 478	15	9.90 164	26	0.09 836	9.89 314	10	26		44	
				16		26			10				
34	20	35	9.79 494		9.90 190		0.09 810	9.89 304		25	25	40	
	24	36	9.79 510	16	9.90 216	26	0.09 784	9.89 294	10	24		36	
	28	37	9.79 526	16	9.90 242	26	0.09 758	9.89 284	10	23		32	
	32	38	9.79 542	16	9.90 268	26	0.09 732	9.89 274	10	22		28	
	36	39	9.79 558	16	9.90 294	26	0.09 706	9.89 264	10	21		24	
				15		26			10				
34	40	40	9.79 573		9.90 320		0.09 680	9.89 254		20	25	20	
	44	41	9.79 589	16	9.90 346	26	0.09 654	9.89 244	10	19		16	
	48	42	9.79 605	16	9.90 371	25	0.09 629	9.89 233	11	18		12	
	52	43	9.79 621	16	9.90 397	26	0.09 603	9.89 223	10	17		8	
	56	44	9.79 636	15	9.90 423	26	0.09 577	9.89 213	10	16		4	
				16		26			10				
35	0	45	9.79 652		9.90 449		0.09 551	9.89 203		15	25	0	
	4	46	9.79 668	16	9.90 475	26	0.09 525	9.89 193	10	14		56	
	8	47	9.79 684	16	9.90 501	26	0.09 499	9.89 183	10	13		52	
	12	48	9.79 699	15	9.90 527	26	0.09 473	9.89 173	10	12		48	
	16	49	9.79 715	16	9.90 553	26	0.09 447	9.89 162	11	11		44	
				16		25			10				
35	20	50	9.79 731		9.90 578		0.09 422	9.89 152		10	24	40	
	24	51	9.79 746	15	9.90 604	26	0.09 396	9.89 142	10	9		36	
	28	52	9.79 762	16	9.90 630	26	0.09 370	9.89 132	10	8		32	
	32	53	9.79 778	16	9.90 656	26	0.09 344	9.89 122	10	7		28	
	36	54	9.79 793	15	9.90 682	26	0.09 318	9.89 112	10	6		24	
				16		26			11				
35	40	55	9.79 809		9.90 708		0.09 292	9.89 101		5	24	20	
	44	56	9.79 825	16	9.90 734	26	0.09 266	9.89 091	10	4		16	
	48	57	9.79 840	15	9.90 759	25	0.09 241	9.89 081	10	3		12	
	52	58	9.79 856	16	9.90 785	26	0.09 215	9.89 071	10	2		8	
	56	59	9.79 872	16	9.90 811	26	0.09 189	9.89 060	11	1		4	
				15		26			10				
36	0	60	9.79 887		9.90 837		0.09 163	9.89 050		0	24	0	
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.			m. s.	

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>				39 <sup>o</sup>									
m.	s.	L. Sin.	d.	L. Tang.	e. d.	L. Cotg.	L. Cos.	d.					
36	0	9.79 887		9.90 837		0.09 163	9.89 050		60	24	0		
	4	9.79 903	16	9.90 863	26	0.09 137	9.89 040	10	59		56		
	8	9.79 918	15	9.90 889	26	0.09 111	9.89 030	10	58		52		
	12	9.79 934	16	9.90 914	25	0.09 086	9.89 020	10	57		48		
	16	9.79 950	16	9.90 940	26	0.09 060	9.89 009	11	56		44		
			15		26			10					
36	20	9.79 965		9.90 966		0.09 034	9.88 999		55	23	40		
	24	9.79 981	16	9.90 992	26	0.09 008	9.88 989	10	54		36		
	28	9.79 996	15	9.91 018	26	0.08 982	9.88 978	11	53		32		
	32	9.80 012	16	9.91 043	25	0.08 957	9.88 968	10	52		28		
	36	9.80 027	15	9.91 069	26	0.08 931	9.88 958	10	51		24		
			16		26			10					
36	40	9.80 043		9.91 095		0.08 905	9.88 948		50	23	20		
	44	9.80 058	15	9.91 121	26	0.08 879	9.88 937	11	49		16		
	48	9.80 074	16	9.91 147	26	0.08 853	9.88 927	10	48		12		
	52	9.80 089	15	9.91 172	25	0.08 828	9.88 917	10	47		8		
	56	9.80 105	16	9.91 198	26	0.08 802	9.88 906	11	46		4		
			15		26			10					
37	0	9.80 120		9.91 224		0.08 776	9.88 896		45	23	0		
	4	9.80 136	16	9.91 250	26	0.08 750	9.88 886	10	44		56		
	8	9.80 151	15	9.91 276	26	0.08 724	9.88 875	11	43		52		
	12	9.80 166	15	9.91 301	25	0.08 699	9.88 865	10	42		48		
	16	9.80 182	16	9.91 327	26	0.08 673	9.88 855	10	41		44		
			15		26			11					
37	20	9.80 197		9.91 353		0.08 647	9.88 844		40	22	40		
	24	9.80 213	16	9.91 379	26	0.08 621	9.88 834	10	39		36		
	28	9.80 228	15	9.91 404	25	0.08 596	9.88 824	10	38		32		
	32	9.80 244	16	9.91 430	26	0.08 570	9.88 813	11	37		28		
	36	9.80 259	15	9.91 456	26	0.08 544	9.88 803	10	36		24		
			15		26			10					
37	40	9.80 274		9.91 482		0.08 518	9.88 793		35	22	20		
	44	9.80 290	16	9.91 507	25	0.08 493	9.88 782	11	34		16		
	48	9.80 305	15	9.91 533	26	0.08 467	9.88 772	10	33		12		
	52	9.80 320	15	9.91 559	24	0.08 441	9.88 761	11	32		8		
	56	9.80 336	16	9.91 585	26	0.08 415	9.88 751	10	31		4		
			15		25			10					
38	0	9.80 351		9.91 610		0.08 390	9.88 741		30	22	0		
	4	9.80 366	15	9.91 636	26	0.08 364	9.88 730	11	29		56		
	8	9.80 382	16	9.91 662	26	0.08 338	9.88 720	10	28		52		
	12	9.80 397	15	9.91 688	26	0.08 312	9.88 709	11	27		48		
	16	9.80 412	15	9.91 713	25	0.08 287	9.88 699	10	26		44		
			16		26			11					
38	20	9.80 428		9.91 739		0.08 261	9.88 688		25	21	40		
	24	9.80 443	15	9.91 765	26	0.08 235	9.88 678	10	24		36		
	28	9.80 458	15	9.91 791	26	0.08 209	9.88 668	10	23		32		
	32	9.80 473	15	9.91 816	25	0.08 184	9.88 657	11	22		28		
	36	9.80 489	16	9.91 842	26	0.08 158	9.88 647	10	21		24		
			15		26			11					
38	40	9.80 504		9.91 868		0.08 132	9.88 636		20	21	20		
	44	9.80 519	15	9.91 893	25	0.08 107	9.88 626	10	19		16		
	48	9.80 534	15	9.91 919	26	0.08 081	9.88 615	11	18		12		
	52	9.80 550	16	9.91 945	26	0.08 055	9.88 605	10	17		8		
	56	9.80 565	15	9.91 971	26	0.08 029	9.88 594	11	16		4		
			15		25			10					
39	0	9.80 580		9.91 996		0.08 004	9.88 584		15	21	0		
	4	9.80 595	15	9.92 022	26	0.07 978	9.88 573	11	14		56		
	8	9.80 610	15	9.92 048	26	0.07 952	9.88 563	10	13		52		
	12	9.80 625	16	9.92 073	25	0.07 927	9.88 552	11	12		48		
	16	9.80 641	16	9.92 099	26	0.07 901	9.88 542	10	11		44		
			15		26			11					
39	20	9.80 656		9.92 125		0.07 875	9.88 531		10	20	40		
	24	9.80 671	15	9.92 150	25	0.07 850	9.88 521	10	9		36		
	28	9.80 686	15	9.92 176	26	0.07 824	9.88 510	11	8		32		
	32	9.80 701	15	9.92 202	26	0.07 798	9.88 499	11	7		28		
	36	9.80 716	15	9.92 227	25	0.07 773	9.88 489	10	6		24		
			15		26			10					
39	40	9.80 731		9.92 253		0.07 747	9.88 478		5	20	20		
	44	9.80 746	15	9.92 279	26	0.07 721	9.88 468	11	4		16		
	48	9.80 762	16	9.92 304	25	0.07 696	9.88 457	11	3		12		
	52	9.80 777	15	9.92 330	26	0.07 670	9.88 447	10	2		8		
	56	9.80 792	15	9.92 356	26	0.07 644	9.88 436	11	1		4		
			15		25			11					
40	0	9.80 807		9.92 381		0.07 619	9.88 425		0	20	0		
		L. Cos.	d.	L. Cotg.	e. d.	L. Tang.	L. Sin.	d.			m. s.		

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>		40°																	
m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.										
40	0	0	9.80 807		9.92 381		0.07 619	9.88 425		60	20	0							
	4	1	9.80 822	15	9.92 407	26	0.07 593	9.88 415	10	59		56							
	8	2	9.80 837	15	9.92 433	26	0.07 567	9.88 404	11	58		52							
	12	3	9.80 852	15	9.92 458	25	0.07 542	9.88 394	10	57		48							
	16	4	9.80 867	15	9.92 484	26	0.07 516	9.88 383	11	56		44							
				15		26			11										
40	20	5	9.80 882		9.92 510		0.07 490	9.88 372		55	19	40							
	24	6	9.80 897	15	9.92 535	25	0.07 465	9.88 362	10	54		36							
	28	7	9.80 912	15	9.92 561	26	0.07 439	9.88 351	11	53		32							
	32	8	9.80 927	15	9.92 587	26	0.07 413	9.88 340	11	52		28							
	36	9	9.80 942	15	9.92 612	25	0.07 388	9.88 330	10	51		24							
				15		26			11										
40	40	10	9.80 957		9.92 638		0.07 362	9.88 319		50	19	20							
	44	11	9.80 972	15	9.92 663	25	0.07 337	9.88 308	11	49		16							
	48	12	9.80 987	15	9.92 689	26	0.07 311	9.88 298	10	48		12							
	52	13	9.81 002	15	9.92 715	26	0.07 285	9.88 287	11	47		8							
	56	14	9.81 017	15	9.92 740	25	0.07 260	9.88 276	11	46		4							
				15		26			10										
41	0	15	9.81 032		9.92 766		0.07 234	9.88 266		45	19	0							
	4	16	9.81 047	15	9.92 792	26	0.07 208	9.88 255	11	44		56							
	8	17	9.81 061	14	9.92 817	25	0.07 183	9.88 244	11	43		52							
	12	18	9.81 076	15	9.92 843	26	0.07 157	9.88 234	10	42		48							
	16	19	9.81 091	15	9.92 868	25	0.07 132	9.88 223	11	41		44							
				15		26			11										
41	20	20	9.81 106		9.92 894		0.07 106	9.88 212		40	18	40							
	24	21	9.81 121	15	9.92 920	26	0.07 080	9.88 201	11	39		36							
	28	22	9.81 136	15	9.92 945	25	0.07 055	9.88 191	10	38		32							
	32	23	9.81 151	15	9.92 971	26	0.07 029	9.88 180	11	37		28							
	36	24	9.81 166	15	9.92 996	25	0.07 004	9.88 169	11	36		24							
				14		26			11										
41	40	25	9.81 180		9.93 022		0.06 978	9.88 158		35	18	20							
	44	26	9.81 195	15	9.93 048	26	0.06 952	9.88 148	10	34		16							
	48	27	9.81 210	15	9.93 073	25	0.06 927	9.88 137	11	33		12							
	52	28	9.81 225	15	9.93 099	26	0.06 901	9.88 126	11	32		8							
	56	29	9.81 240	15	9.93 124	25	0.06 876	9.88 115	11	31		4							
				14		26			10										
42	0	30	9.81 254		9.93 150		0.06 850	9.88 105		30	18	0							
	4	31	9.81 269	15	9.93 175	25	0.06 825	9.88 094	11	29		56							
	8	32	9.81 284	15	9.93 201	26	0.06 799	9.88 083	11	28		52							
	12	33	9.81 299	15	9.93 227	26	0.06 773	9.88 072	11	27		48							
	16	34	9.81 314	15	9.93 252	25	0.06 748	9.88 061	11	26		44							
				14		26			10										
42	20	35	9.81 328		9.93 278		0.06 722	9.88 051		25	17	40							
	24	36	9.81 343	15	9.93 303	25	0.06 697	9.88 040	11	24		36							
	28	37	9.81 358	15	9.93 329	26	0.06 671	9.88 029	11	23		32							
	32	38	9.81 372	14	9.93 354	25	0.06 646	9.88 018	11	22		28							
	36	39	9.81 387	15	9.93 380	26	0.06 620	9.88 007	11	21		24							
				15		26			11										
42	40	40	9.81 402		9.93 406		0.06 594	9.87 996		20	17	20							
	44	41	9.81 417	15	9.93 431	25	0.06 569	9.87 985	11	19		16							
	48	42	9.81 431	14	9.93 457	26	0.06 543	9.87 975	10	18		12							
	52	43	9.81 446	15	9.93 482	25	0.06 518	9.87 964	11	17		8							
	56	44	9.81 461	15	9.93 508	26	0.06 492	9.87 953	11	16		4							
				14		25			11										
43	0	45	9.81 475		9.93 533		0.06 467	9.87 942		15	17	0							
	4	46	9.81 490	15	9.93 559	26	0.06 441	9.87 931	11	14		56							
	8	47	9.81 505	15	9.93 584	25	0.06 416	9.87 920	11	13		52							
	12	48	9.81 519	14	9.93 610	26	0.06 390	9.87 909	11	12		48							
	16	49	9.81 534	15	9.93 636	26	0.06 364	9.87 898	11	11		44							
				15		25			11										
43	20	50	9.81 549		9.93 661		0.06 339	9.87 887		10	16	40							
	24	51	9.81 563	14	9.93 687	26	0.06 313	9.87 877	11	9		36							
	28	52	9.81 578	15	9.93 712	25	0.06 288	9.87 866	11	8		32							
	32	53	9.81 592	14	9.93 738	26	0.06 262	9.87 855	11	7		28							
	36	54	9.81 607	15	9.93 763	25	0.06 237	9.87 844	11	6		24							
				15		26			11										
43	40	55	9.81 622		9.93 789		0.06 211	9.87 833		5	16	20							
	44	56	9.81 636	14	9.93 814	25	0.06 186	9.87 822	11	4		16							
	48	57	9.81 651	15	9.93 840	26	0.06 160	9.87 811	11	3		12							
	52	58	9.81 665	14	9.93 865	25	0.06 135	9.87 800	11	2		8							
	56	59	9.81 680	15	9.93 891	26	0.06 109	9.87 789	11	1		4							
				14		25			11										
44	0	60	9.81 694		9.93 916		0.06 084	9.87 778		0	16	0							
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.			m.	s.						

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>			41°								
m.	s.	'	L. Sin.	d.	L. Tang.	c.d.	L. Cotg.	L. Cos.	d.		
44	0	0	9.81 694		9.93 916		0.06 084	9.87 778		60	16 0
	4	1	9.81 709	15	9.93 942	26	0.06 058	9.87 767	11	59	56
	8	2	9.81 723		9.93 967		0.06 033	9.87 756	11	58	52
	12	3	9.81 738	15	9.93 993	26	0.06 007	9.87 745	11	57	48
	16	4	9.81 752	14	9.94 018	25	0.05 982	9.87 734	11	56	44
				15		26			11		
44	20	5	9.81 767		9.94 044		0.05 956	9.87 723		55	15 40
	24	6	9.81 781	14	9.94 069	25	0.05 931	9.87 712	11	54	36
	28	7	9.81 796	15	9.94 095	26	0.05 905	9.87 701	11	53	32
	32	8	9.81 810	14	9.94 120	25	0.05 880	9.87 690	11	52	28
	36	9	9.81 825	15	9.94 146	26	0.05 854	9.87 679	11	51	24
				14		25			11		
44	40	10	9.81 839		9.94 171		0.05 829	9.87 668		50	15 20
	44	11	9.81 854	15	9.94 197	25	0.05 803	9.87 657	11	49	16
	48	12	9.81 868	14	9.94 222	26	0.05 778	9.87 646	11	48	12
	52	13	9.81 882	14	9.94 248	26	0.05 752	9.87 635	11	47	8
	56	14	9.81 897	15	9.94 273	25	0.05 727	9.87 624	11	46	4
				14		26			11		
45	0	15	9.81 911		9.94 299		0.05 701	9.87 613		45	15 0
	4	16	9.81 926	15	9.94 324	25	0.05 676	9.87 601	12	44	56
	8	17	9.81 940	14	9.94 350	26	0.05 650	9.87 590	11	43	52
	12	18	9.81 955	15	9.94 375	25	0.05 625	9.87 579	11	42	48
	16	19	9.81 969	14	9.94 401	26	0.05 599	9.87 568	11	41	44
				14		25			11		
45	20	20	9.81 983		9.94 426		0.05 574	9.87 557		40	14 40
	24	21	9.81 998	15	9.94 452	26	0.05 548	9.87 546	11	39	36
	28	22	9.82 012	14	9.94 477	25	0.05 523	9.87 535	11	38	32
	32	23	9.82 026	14	9.94 503	26	0.05 497	9.87 524	11	37	28
	36	24	9.82 041	15	9.94 528	25	0.05 472	9.87 513	11	36	24
				14		26			12		
45	40	25	9.82 055		9.94 554		0.05 446	9.87 501		35	14 20
	44	26	9.82 069	14	9.94 579	25	0.05 421	9.87 490	11	34	16
	48	27	9.82 084	15	9.94 604	26	0.05 396	9.87 479	11	33	12
	52	28	9.82 098	14	9.94 630	26	0.05 370	9.87 468	11	32	8
	56	29	9.82 112	14	9.94 655	25	0.05 345	9.87 457	11	31	4
				14		26			11		
46	0	30	9.82 126		9.94 681		0.05 319	9.87 446		30	14 0
	4	31	9.82 141	15	9.94 706	25	0.05 294	9.87 434	12	29	56
	8	32	9.82 155	14	9.94 732	26	0.05 268	9.87 423	11	28	52
	12	33	9.82 169	14	9.94 757	25	0.05 243	9.87 412	11	27	48
	16	34	9.82 184	15	9.94 783	26	0.05 217	9.87 401	11	26	44
				14		25			11		
46	20	35	9.82 198		9.94 808		0.05 192	9.87 390		25	13 40
	24	36	9.82 212	14	9.94 834	26	0.05 166	9.87 378	12	24	36
	28	37	9.82 226	14	9.94 859	25	0.05 141	9.87 367	11	23	32
	32	38	9.82 240	14	9.94 884	25	0.05 116	9.87 356	11	22	28
	36	39	9.82 255	15	9.94 910	26	0.05 090	9.87 345	11	21	24
				14		25			11		
46	40	40	9.82 269		9.94 935		0.05 065	9.87 334		20	13 20
	44	41	9.82 283	14	9.94 961	26	0.05 039	9.87 322	12	19	16
	48	42	9.82 297	14	9.94 986	25	0.05 014	9.87 311	11	18	12
	52	43	9.82 311	14	9.95 012	26	0.04 988	9.87 300	11	17	8
	56	44	9.82 326	15	9.95 037	25	0.04 963	9.87 288	12	16	4
				14		25			11		
47	0	45	9.82 340		9.95 062		0.04 938	9.87 277		15	13 0
	4	46	9.82 354	14	9.95 088	26	0.04 912	9.87 266	11	14	56
	8	47	9.82 368	14	9.95 113	25	0.04 887	9.87 255	11	13	52
	12	48	9.82 382	14	9.95 139	26	0.04 861	9.87 243	12	12	48
	16	49	9.82 396	14	9.95 164	25	0.04 836	9.87 232	11	11	44
				14		26			11		
47	20	50	9.82 410		9.95 190		0.04 810	9.87 221		10	12 40
	24	51	9.82 424	14	9.95 215	25	0.04 785	9.87 209	12	9	36
	28	52	9.82 439	15	9.95 240	25	0.04 760	9.87 198	11	8	32
	32	53	9.82 453	14	9.95 266	26	0.04 734	9.87 187	12	7	28
	36	54	9.82 467	14	9.95 291	25	0.04 709	9.87 175	11	6	24
				14		26			11		
47	40	55	9.82 481		9.95 317		0.04 683	9.87 164		5	12 20
	44	56	9.82 495	14	9.95 342	25	0.04 658	9.87 153	12	4	16
	48	57	9.82 509	14	9.95 368	26	0.04 632	9.87 141	11	3	12
	52	58	9.82 523	14	9.95 393	25	0.04 607	9.87 130	11	2	8
	56	59	9.82 537	14	9.95 418	25	0.04 582	9.87 119	11	1	4
				14		26			12		
48	0	60	9.82 551		9.95 444		0.04 556	9.87 107		0	12 0
			L. Cos.	d.	L. Cotg.	c.d.	L. Tang.	L. Sin.	d.	'	m. s.

TABLE 21.—*Five-place logarithms of circular functions, etc.—Continued.* $2^h$  $42^c$ 

m.	s.	$^s$	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
48	0	0	9.82 551		9.95 444		0.04 556	9.87 107		60	12 0
	4	1	9.82 565	14	9.95 469	25	0.04 531	9.87 096	11	59	56
	8	2	9.82 579	14	9.95 495	25	0.04 506	9.87 085	11	58	52
	12	3	9.82 593	14	9.95 520	25	0.04 480	9.87 073	12	57	48
	16	4	9.82 607	14	9.95 545	26	0.04 455	9.87 062	12	56	44
48	20	5	9.82 621		9.95 571		0.04 429	9.87 050		55	11 40
	24	6	9.82 635	14	9.95 596	25	0.04 404	9.87 039	11	54	36
	28	7	9.82 649	14	9.95 622	26	0.04 378	9.87 028	11	53	32
	32	8	9.82 663	14	9.95 647	25	0.04 353	9.87 016	12	52	28
	36	9	9.82 677	14	9.95 672	26	0.04 328	9.87 005	11	51	24
48	40	10	9.82 691		9.95 698		0.04 302	9.86 993		50	11 20
	44	11	9.82 705	14	9.95 723	25	0.04 277	9.86 982	11	49	16
	48	12	9.82 719	14	9.95 748	25	0.04 252	9.86 970	12	48	12
	52	13	9.82 733	14	9.95 774	26	0.04 226	9.86 959	11	47	8
	56	14	9.82 747	14	9.95 799	25	0.04 201	9.86 947	12	46	4
49	0	15	9.82 761		9.95 825		0.04 175	9.86 936		45	11 0
	4	16	9.82 775	14	9.95 850	25	0.04 150	9.86 924	12	44	56
	8	17	9.82 788	13	9.95 875	25	0.04 125	9.86 913	11	43	52
	12	18	9.82 802	14	9.95 901	26	0.04 099	9.86 902	11	42	48
	16	19	9.82 816	14	9.95 926	25	0.04 074	9.86 890	12	41	44
49	20	20	9.82 830		9.95 952		0.04 048	9.86 879		40	10 40
	24	21	9.82 844	14	9.95 977	25	0.04 023	9.86 867	12	39	36
	28	22	9.82 858	14	9.96 002	26	0.03 998	9.86 855	12	38	32
	32	23	9.82 872	13	9.96 028	25	0.03 972	9.86 844	11	37	28
	36	24	9.82 886	14	9.96 053	25	0.03 947	9.86 832	12	36	24
49	40	25	9.82 899		9.96 078		0.03 922	9.86 821		35	10 20
	44	26	9.82 913	14	9.96 104	26	0.03 896	9.86 809	12	34	16
	48	27	9.82 927	14	9.96 129	25	0.03 871	9.86 798	11	33	12
	52	28	9.82 941	14	9.96 155	26	0.03 845	9.86 786	12	32	8
	56	29	9.82 955	13	9.96 180	25	0.03 820	9.86 775	11	31	4
50	0	30	9.82 968		9.96 205		0.03 795	9.86 763		30	10 0
	4	31	9.82 982	14	9.96 231	26	0.03 769	9.86 752	11	29	56
	8	32	9.82 996	14	9.96 256	25	0.03 744	9.86 740	12	28	52
	12	33	9.83 010	14	9.96 281	25	0.03 719	9.86 728	12	27	48
	16	34	9.83 023	13	9.96 307	26	0.03 693	9.86 717	11	26	44
50	20	35	9.83 037		9.96 332		0.03 668	9.86 705		25	9 40
	24	36	9.83 051	14	9.96 357	25	0.03 643	9.86 694	11	24	36
	28	37	9.83 065	14	9.96 383	26	0.03 617	9.86 682	12	23	32
	32	38	9.83 078	13	9.96 408	25	0.03 592	9.86 670	12	22	28
	36	39	9.83 092	14	9.96 433	25	0.03 567	9.86 659	11	21	24
50	40	40	9.83 106		9.96 459		0.03 541	9.86 647		20	9 20
	44	41	9.83 120	14	9.96 484	25	0.03 516	9.86 635	12	19	16
	48	42	9.83 133	13	9.96 510	26	0.03 490	9.86 624	11	18	12
	52	43	9.83 147	14	9.96 535	25	0.03 465	9.86 612	12	17	8
	56	44	9.83 161	14	9.96 560	26	0.03 440	9.86 600	12	16	4
51	0	45	9.83 174		9.96 586		0.03 414	9.86 589		15	9 0
	4	46	9.83 188	14	9.96 611	25	0.03 389	9.86 577	12	14	56
	8	47	9.83 202	14	9.96 636	26	0.03 364	9.86 565	12	13	52
	12	48	9.83 215	13	9.96 662	25	0.03 338	9.86 554	11	12	48
	16	49	9.83 229	14	9.96 687	25	0.03 313	9.86 542	12	11	44
51	20	50	9.83 242		9.96 712		0.03 288	9.86 530		10	8 40
	24	51	9.83 256	14	9.96 738	26	0.03 262	9.86 518	12	9	36
	28	52	9.83 270	14	9.96 763	25	0.03 237	9.86 507	11	8	32
	32	53	9.83 283	13	9.96 788	25	0.03 212	9.86 495	12	7	28
	36	54	9.83 297	14	9.96 814	25	0.03 186	9.86 483	12	6	24
51	40	55	9.83 310		9.96 839		0.03 161	9.86 472		5	8 20
	44	56	9.83 324	14	9.96 864	25	0.03 136	9.86 460	12	4	16
	48	57	9.83 338	14	9.96 890	26	0.03 110	9.86 448	12	3	12
	52	58	9.83 351	13	9.96 915	25	0.03 085	9.86 436	12	2	8
	56	59	9.83 365	14	9.96 940	25	0.03 060	9.86 425	11	1	4
52	0	60	9.83 378		9.96 966		0.03 034	9.86 413		0	8 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

 $47^c$  $3^h$

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>			43°								
m. s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.			
52	0	0	9.83 378		9.96 966		0.03 034	9.86 413		60	8 0
	4	1	9.83 392	14	9.96 991	25	0.03 009	9.86 401	12	59	56
	8	2	9.83 405	13	9.97 016	25	0.02 984	9.86 389	12	58	52
	12	3	9.83 419	14	9.97 042	26	0.02 958	9.86 377	12	57	48
	16	4	9.83 432	13	9.97 067	25	0.02 933	9.86 366	11	56	44
				14		25			12		
52	20	5	9.83 446		9.97 092		0.02 908	9.86 354		55	7 40
	24	6	9.83 459	13	9.97 118	26	0.02 882	9.86 342	12	54	36
	28	7	9.83 473	14	9.97 143	25	0.02 857	9.86 330	12	53	32
	32	8	9.83 486	13	9.97 168	25	0.02 832	9.86 318	12	52	28
	36	9	9.83 500	14	9.97 193	25	0.02 807	9.86 306	12	51	24
				13		26			11		
52	40	10	9.83 513		9.97 219		0.02 781	9.86 295		50	7 20
	44	11	9.83 527	14	9.97 244	25	0.02 756	9.86 283	12	49	16
	48	12	9.83 540	13	9.97 269	25	0.02 731	9.86 271	12	48	12
	52	13	9.83 554	14	9.97 295	25	0.02 705	9.86 259	12	47	8
	56	14	9.83 567	13	9.97 320	25	0.02 680	9.86 247	12	46	4
				14		25			12		
53	0	15	9.83 581		9.97 345		0.02 655	9.86 235		45	7 0
	4	16	9.83 594	13	9.97 371	26	0.02 629	9.86 223	12	44	56
	8	17	9.83 608	14	9.97 396	25	0.02 604	9.86 211	12	43	52
	12	18	9.83 621	13	9.97 421	25	0.02 579	9.86 200	11	42	48
	16	19	9.83 634	13	9.97 447	26	0.02 553	9.86 188	12	41	44
				14		25			12		
53	20	20	9.83 648		9.97 472		0.02 528	9.86 176		40	6 40
	24	21	9.83 661	13	9.97 497	25	0.02 503	9.86 164	12	39	36
	28	22	9.83 674	13	9.97 523	26	0.02 477	9.86 152	12	38	32
	32	23	9.83 688	14	9.97 548	25	0.02 452	9.86 140	12	37	28
	36	24	9.83 701	13	9.97 573	25	0.02 427	9.86 128	12	36	24
				14		25			12		
53	40	25	9.83 715		9.97 598		0.02 402	9.86 116		35	6 20
	44	26	9.83 728	13	9.97 624	26	0.02 376	9.86 104	12	34	16
	48	27	9.83 741	13	9.97 649	25	0.02 351	9.86 092	12	33	12
	52	28	9.83 755	14	9.97 674	25	0.02 326	9.86 080	12	32	8
	56	29	9.83 768	13	9.97 700	26	0.02 300	9.86 068	12	31	4
				13		25			12		
54	0	30	9.83 781		9.97 725		0.02 275	9.86 056		30	6 0
	4	31	9.83 795	14	9.97 750	25	0.02 250	9.86 044	12	29	56
	8	32	9.83 808	13	9.97 776	25	0.02 224	9.86 032	12	28	52
	12	33	9.83 821	13	9.97 801	25	0.02 199	9.86 020	12	27	48
	16	34	9.83 834	14	9.97 826	25	0.02 174	9.86 008	12	26	44
				14		25			12		
54	20	35	9.83 848		9.97 851		0.02 149	9.85 996		35	5 40
	24	36	9.83 861	13	9.97 877	26	0.02 123	9.85 984	12	34	36
	28	37	9.83 874	13	9.97 902	25	0.02 098	9.85 972	12	33	32
	32	38	9.83 887	14	9.97 927	25	0.02 073	9.85 960	12	32	28
	36	39	9.83 901	13	9.97 953	25	0.02 047	9.85 948	12	31	24
				13		25			12		
54	40	40	9.83 914		9.97 978		0.02 022	9.85 936		20	5 20
	44	41	9.83 927	13	9.98 003	25	0.01 997	9.85 924	12	19	16
	48	42	9.83 940	13	9.98 029	26	0.01 971	9.85 912	12	18	12
	52	43	9.83 954	14	9.98 054	25	0.01 946	9.85 900	12	17	8
	56	44	9.83 967	13	9.98 079	25	0.01 921	9.85 888	12	16	4
				13		25			12		
55	0	45	9.83 980		9.98 104		0.01 896	9.85 876		15	5 0
	4	46	9.83 993	13	9.98 130	26	0.01 870	9.85 864	12	14	56
	8	47	9.84 006	13	9.98 155	25	0.01 845	9.85 851	13	13	52
	12	48	9.84 020	14	9.98 180	25	0.01 820	9.85 839	12	12	48
	16	49	9.84 033	13	9.98 206	26	0.01 794	9.85 827	12	11	44
				13		25			12		
55	20	50	9.84 046		9.98 231		0.01 769	9.85 815		10	4 40
	24	51	9.84 059	13	9.98 256	25	0.01 744	9.85 803	12	9	36
	28	52	9.84 072	13	9.98 281	25	0.01 719	9.85 791	12	8	32
	32	53	9.84 085	13	9.98 307	26	0.01 693	9.85 779	13	7	28
	36	54	9.84 098	14	9.98 332	25	0.01 668	9.85 766	12	6	24
				14		25			12		
55	40	55	9.84 112		9.98 357		0.01 643	9.85 754		5	4 20
	44	56	9.84 125	13	9.98 383	26	0.01 617	9.85 742	12	4	16
	48	57	9.84 138	13	9.98 408	25	0.01 592	9.85 730	12	3	12
	52	58	9.84 151	13	9.98 433	25	0.01 567	9.85 718	12	2	8
	56	59	9.84 164	13	9.98 458	26	0.01 542	9.85 706	13	1	4
				13		25			12		
56	0	60	9.84 177		9.98 484		0.01 516	9.85 693		0	4 0
		L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.	



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2<sup>h</sup>44<sup>c</sup>

m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
56	0	0	9.84 177		9.98 484	25	0.01 516	9.85 693	12	60	4 0
	4	1	9.84 190	13	9.98 509	25	0.01 491	9.85 681	12	59	56
	8	2	9.84 203	13	9.98 534	26	0.01 466	9.85 669	12	58	52
	12	3	9.84 216	13	9.98 560	25	0.01 440	9.85 657	12	57	48
	16	4	9.84 229	13	9.98 585	25	0.01 415	9.85 645	13	56	44
56	20	5	9.84 242		9.98 610	25	0.01 390	9.85 632	12	55	3 40
	24	6	9.84 255	13	9.98 635	26	0.01 365	9.85 620	12	54	36
	28	7	9.84 269	13	9.98 661	25	0.01 339	9.85 608	12	53	32
	32	8	9.84 282	13	9.98 686	25	0.01 314	9.85 596	13	52	28
	36	9	9.84 296	13	9.98 711	26	0.01 289	9.85 583	12	51	24
56	40	10	9.84 308		9.98 737	25	0.01 263	9.85 571	12	50	3 20
	44	11	9.84 321	13	9.98 762	25	0.01 238	9.85 559	12	49	16
	48	12	9.84 334	13	9.98 787	25	0.01 213	9.85 547	12	48	12
	52	13	9.84 347	13	9.98 812	25	0.01 188	9.85 534	13	47	8
	56	14	9.84 360	13	9.98 838	25	0.01 162	9.85 522	12	46	4
57	0	15	9.84 373		9.98 863	25	0.01 137	9.85 510	13	45	3 0
	4	16	9.84 385	12	9.98 888	25	0.01 112	9.85 497	12	44	56
	8	17	9.84 398	13	9.98 913	26	0.01 087	9.85 485	12	43	52
	12	18	9.84 411	13	9.98 939	25	0.01 061	9.85 473	12	42	48
	16	19	9.84 424	13	9.98 964	25	0.01 036	9.85 460	13	41	44
57	20	20	9.84 437		9.98 989	26	0.01 011	9.85 448	12	40	2 40
	24	21	9.84 450	13	9.99 015	25	0.00 985	9.85 436	13	39	36
	28	22	9.84 463	13	9.99 040	25	0.00 960	9.85 423	13	38	32
	32	23	9.84 476	13	9.99 065	25	0.00 935	9.85 411	12	37	28
	36	24	9.84 489	13	9.99 090	26	0.00 910	9.85 399	13	36	24
57	40	25	9.84 502		9.99 116	25	0.00 884	9.85 386	12	35	2 20
	44	26	9.84 515	13	9.99 141	25	0.00 859	9.85 374	13	34	16
	48	27	9.84 528	12	9.99 166	25	0.00 834	9.85 361	12	33	12
	52	28	9.84 540	13	9.99 191	26	0.00 809	9.85 349	12	32	8
	56	29	9.84 553	13	9.99 217	25	0.00 783	9.85 337	13	31	4
58	0	30	9.84 566		9.99 242	25	0.00 758	9.85 324	12	30	2 0
	4	31	9.84 579	13	9.99 267	26	0.00 733	9.85 312	13	29	56
	8	32	9.84 592	13	9.99 293	25	0.00 707	9.85 299	13	28	52
	12	33	9.84 606	13	9.99 318	25	0.00 682	9.85 287	12	27	48
	16	34	9.84 618	12	9.99 343	25	0.00 657	9.85 274	13	26	44
58	20	35	9.84 630		9.99 368	26	0.00 632	9.85 262	12	25	1 40
	24	36	9.84 643	13	9.99 394	25	0.00 606	9.85 250	13	24	36
	28	37	9.84 656	13	9.99 419	25	0.00 581	9.85 237	13	23	32
	32	38	9.84 669	13	9.99 444	25	0.00 556	9.85 225	12	22	28
	36	39	9.84 682	12	9.99 469	26	0.00 531	9.85 212	13	21	24
58	40	40	9.84 694		9.99 495	25	0.00 505	9.85 200	13	20	1 20
	44	41	9.84 707	13	9.99 520	25	0.00 480	9.85 187	12	19	16
	48	42	9.84 720	13	9.99 545	25	0.00 455	9.85 175	13	18	12
	52	43	9.84 733	12	9.99 570	26	0.00 430	9.85 162	12	17	8
	56	44	9.84 745	13	9.99 596	25	0.00 404	9.85 150	13	16	4
59	0	45	9.84 758		9.99 621	25	0.00 379	9.85 137	12	15	1 0
	4	46	9.84 771	13	9.99 646	26	0.00 354	9.85 125	13	14	56
	8	47	9.84 784	12	9.99 672	25	0.00 328	9.85 112	13	13	52
	12	48	9.84 796	13	9.99 697	25	0.00 303	9.85 100	13	12	48
	16	49	9.84 809	13	9.99 722	25	0.00 278	9.85 087	13	11	44
59	20	50	9.84 822		9.99 747	26	0.00 253	9.85 074	12	10	0 40
	24	51	9.84 835	12	9.99 773	25	0.00 227	9.85 062	13	9	36
	28	52	9.84 847	13	9.99 798	25	0.00 202	9.85 049	13	8	32
	32	53	9.84 860	13	9.99 823	25	0.00 177	9.85 037	12	7	28
	36	54	9.84 873	12	9.99 848	26	0.00 152	9.85 024	13	6	24
59	40	55	9.84 885		9.99 874	25	0.00 126	9.85 012	13	5	0 20
	44	56	9.84 898	13	9.99 899	25	0.00 101	9.84 999	13	4	16
	48	57	9.84 911	13	9.99 924	25	0.00 076	9.84 986	13	3	12
	52	58	9.84 923	12	9.99 949	26	0.00 051	9.84 974	12	2	8
	56	59	9.84 936	13	9.99 975	25	0.00 025	9.84 961	13	1	4
60	0	60	9.84 949		0.00 000		0.00 000	9.84 949		0	0 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.

45<sup>c</sup>3<sup>h</sup>



TABLE 22.—GEODETIC POSITION COMPUTATIONS.

TABLE OF LOGARITHMS OF FACTORS A, B, C, D, E, F, BASED UPON THE CLARKE SPHEROID OF 1866 AND THE METRIC SYSTEM, BETWEEN LATITUDES 0° AND 72°.

[Extracted from reports of the U. S. Coast and Geodetic Survey.]

## CONSTANTS.

$A = \frac{(1 - e^2 \sin^2 \varphi)^{\frac{1}{2}}}{a \operatorname{arc} 1''}$	$\log a = 6.804\ 698\ 57$
	$\log b = 6.803\ 223\ 78$
	$\log e^2 = 7.830\ 502\ 57$
$B = \frac{(1 - e^2 \sin^2 \varphi)^{\frac{1}{2}}}{a (1 - e^2) \operatorname{arc} 1''}$	$\log \frac{1}{a \operatorname{arc} 1''} = 8.509\ 726\ 56$
$C = \frac{(1 - e^2 \sin^2 \varphi)^{\frac{1}{2}} \tan \varphi}{2a^2 (1 - e^2) \operatorname{arc} 1''}$	$\log \frac{1}{a (1 - e^2) \operatorname{arc} 1''} = 8.512\ 676\ 15$
$D = \frac{\frac{1}{2} e^2 \sin \varphi \cos \varphi \operatorname{arc} 1''}{1 - e^2 \sin^2 \varphi}$	$\log \frac{1}{2a^2 (1 - e^2) \operatorname{arc} 1''} = 1.406\ 947\ 6$
$E = \frac{(1 + 3 \tan^2 \varphi) (1 - e^2 \sin^2 \varphi)}{6a^2}$	$\log (\frac{1}{2} e^2 \operatorname{arc} 1'') = 2.692\ 168\ 7$
$F = \frac{1}{12} \sin \varphi \cos^2 \varphi \operatorname{arc} 1''$	$\log \frac{1}{6a^2} = 5.612\ 45$
	$\log (\frac{1}{12} \operatorname{arc} 1'') = 8.291\ 96$

Ratio adopted in this table is the Clarke value of the meter, namely, 1 meter = 39.370432 inches.

The formulas for the computation of the geodetic differences in latitude  $\Delta\varphi$ , in longitude  $\Delta\lambda$ , and in azimuth  $\Delta\alpha$  are as follows:

$$\begin{cases} -\Delta\varphi = s \cos \alpha \cdot B + s^2 \sin^2 \alpha \cdot C + (\delta\varphi)^2 D - h \cdot s^2 \sin^2 \alpha \cdot E \\ \Delta\lambda = s \sin \alpha \sec \varphi' \cdot A \\ -\Delta\alpha = \Delta\lambda \sin \frac{1}{2} (\varphi + \varphi') \sec \frac{1}{2} (\Delta\varphi) + (\Delta\lambda)^2 F \end{cases}$$

where

$$\begin{cases} \varphi' = \varphi + \Delta\varphi \\ \lambda' = \lambda + \Delta\lambda \\ \alpha' = \alpha + \Delta\alpha + 180 \end{cases} \quad \text{and} \quad \begin{cases} -\delta\varphi = s \cos \alpha \cdot B + s^2 \sin^2 \alpha \cdot C - h \cdot s^2 \sin^2 \alpha \cdot E \\ \text{also } h = s \cos \alpha \cdot B \end{cases}$$

For subordinate triangulation when the sides do not exceed say 25 kilometers, or about 15 statute miles, the term involving  $E$  in  $\Delta\varphi$  and the factor  $\sec \frac{1}{2} (\Delta\varphi)$ , as well as the term involving  $F$  in  $\Delta\alpha$ , may be omitted.

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 0°.

Lat.	log A	log B	log C	log D	log E	log F
00 00	8.509 7266	8.512 6761	—∞	—∞	5.6125	—∞
1	66	61	8.8707	9.156	5	
2	66	61	8.1717	457	5	
3	66	61	3477	633	5	
4	66	61	4727	758	5	
05	66	61	5696	855	5	
6	66	61	6488	9.934	5	
7	66	61	7158	0.001	5	
8	66	61	7740	059	5	
9	66	61	8249	110	5	
10	8.509 7266	8.512 6761	8.8707	0.156	5.6125	
11	65	61	9121	197	5	
12	65	61	9499	235	5	
13	65	61	8.9846	270	5	
14	65	61	9.0168	302	5	
15	65	61	0468	332	5	
16	65	61	0748	360	5	
17	65	60	1011	386	5	
18	65	60	1259	411	5	
19	65	60	1494	435	5	
20	8.509 7266	8.512 6760	9.1717	0.457	5.6125	8.067
21	65	60	1929	478	5	
22	65	60	2131	498	5	
23	65	60	2324	518	5	
24	65	59	2509	536	5	
25	65	59	2686	554	5	
26	65	59	2857	571	5	
27	65	59	3020	587	5	
28	65	59	3178	603	5	
29	65	58	3331	618	5	
30	8.509 7265	8.512 6758	9.3478	0.633	5.6126	
31	64	58	3620	647	6	
32	64	58	3758	661	6	
33	64	57	9.3892	674	6	
34	64	57	9.4022	687	6	
35	64	57	4148	700	6	
36	64	57	4270	712	6	
37	64	56	4389	724	6	
38	64	56	4505	736	6	
39	64	56	4618	747	6	
40	8.509 7264	8.512 6756	9.4728	0.758	5.6126	6.358
41	64	55	4835	769	6	
42	64	55	9.4939	779	6	
43	64	55	9.5042	789	6	
44	63	54	5141	799	7	
45	63	54	5239	809	7	
46	63	54	5335	819	7	
47	63	53	5428	828	7	
48	63	53	5519	837	7	
49	63	53	5609	846	7	
50	8.509 7263	8.512 6752	9.5697	0.855	5.6127	
51	63	52	5783	863	7	
52	62	51	5866	872	7	
53	62	51	9.5950	880	7	
54	62	51	9.6031	888	8	
55	62	50	6111	896	8	
56	62	50	6189	904	8	
57	62	49	6266	912	8	
58	61	49	6341	919	8	
59	61	49	6416	927	8	
60	8.509 7261	8.512 6748	9.6489	0.934	5.6128	6.534

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 1°.

Lat.	log A	log B	log C	log D	log E	log F
1 00	8.509 7261	8.512 6748	9.6489	0.934	5.6128	6.534
1	61	48	560	941	29	
2	61	47	631	948	29	
3	61	47	701	955	29	
4	61	46	769	962	29	
05	60	46	836	969	29	
6	60	45	903	975	29	
7	60	45	9.6968	982	29	
8	60	44	9.7032	988	30	
9	60	44	096	0.995	30	
10	8.509 7260	8.512 6743	9.7158	1.001	5.6130	
11	59	43	220	007	30	
12	59	42	281	013	30	
13	59	42	341	019	30	
14	59	41	400	025	31	
15	59	41	458	031	31	
16	58	40	516	037	31	
17	58	39	572	042	31	
18	58	39	628	048	31	
19	58	38	684	053	31	
20	8.509 7258	8.512 6738	9.7738	1.059	5.6132	6.658
21	57	37	792	064	32	
22	57	36	846	070	32	
23	57	36	898	075	32	
24	57	35	9.7950	080	32	
25	57	35	9.8002	085	32	
26	56	34	058	090	33	
27	56	33	103	095	33	
28	56	33	152	100	33	
29	56	32	202	105	33	
30	8.509 7256	8.512 6731	9.8250	1.110	5.6133	
31	55	31	298	115	34	
32	55	30	346	119	34	
33	55	29	393	124	34	
34	55	29	439	129	34	
35	54	28	485	133	34	
36	54	27	531	138	35	
37	54	26	576	142	35	
38	54	26	620	147	35	
39	53	25	664	151	35	
40	8.509 7253	8.512 6724	9.8708	1.156	5.6136	6.755
41	53	23	751	160	36	
42	53	23	794	164	36	
43	52	22	836	168	36	
44	52	21	878	173	36	
45	52	20	920	177	37	
46	52	20	961	181	37	
47	51	19	9.9002	185	37	
48	51	18	042	189	37	
49	51	17	082	193	38	
50	8.509 7251	8.512 6716	9.9122	1.197	5.6138	
51	50	16	161	201	38	
52	50	15	200	205	38	
53	50	14	239	209	39	
54	49	13	277	212	39	
55	49	12	315	216	39	
56	49	11	353	220	39	
57	49	10	390	224	40	
58	48	10	427	227	40	
59	48	09	464	231	40	
60	8.509 7248	8.512 6708	9.9500	1.2347	5.6140	6.834

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 2°.

Lat.	log A	log B	log C	log D	log E	log F
0 0	8.509 7248	8.512 6708	9.95002	1.2347	5.6140	6.834
1	47	07	5363	383	41	
2	47	06	5721	419	41	
3	47	05	6076	454	41	
4	47	04	6428	489	41	
5	46	03	6777	524	42	
6	46	02	7123	559	42	
7	46	01	7467	593	42	
8	45	6700	7808	627	43	
9	45	6699	8146	661	43	
10	8.509 7245	8.512 6698	9.98482	1.2694	5.6143	
11	44	97	8815	727	43	
12	44	97	9145	760	44	
13	44	96	9473	793	44	
14	43	95	9.99799	826	44	
15	43	94	0.00122	858	45	
16	43	93	0443	890	45	
17	42	91	0762	922	45	
18	42	90	1078	953	45	
19	42	89	1392	1.2984	46	
20	8.509 7241	8.512 6688	0.01703	1.3015	5.6146	6.901
21	41	87	2013	946	46	
22	41	86	2320	977	47	
23	40	85	2625	107	47	
24	40	84	2928	138	47	
25	40	83	3229	168	48	
26	39	82	3528	197	48	
27	39	81	3825	227	48	
28	38	80	4119	256	49	
29	38	79	4412	285	49	
30	8.509 7238	8.512 6678	0.04703	1.3314	5.6149	
31	37	76	4992	343	50	
32	37	75	5279	372	50	
33	37	74	5564	400	50	
34	36	73	5847	428	51	
35	36	72	6129	456	51	
36	35	71	6408	484	51	
37	35	70	6686	512	52	
38	35	68	6962	539	52	
39	34	67	7237	567	52	
40	8.509 7234	8.512 6666	0.07509	1.3594	5.6153	6.959
41	33	65	7780	621	53	
42	33	64	8050	648	53	
43	33	62	8317	674	54	
44	32	61	8583	701	54	
45	32	60	8848	727	54	
46	31	59	9111	753	55	
47	31	58	9372	779	55	
48	31	56	9631	805	56	
49	30	55	0.09890	831	56	
50	8.509 7230	8.512 6654	0.10146	1.3856	5.6156	
51	29	52	0401	882	57	
52	29	51	0655	907	57	
53	28	50	0907	932	57	
54	28	49	1158	957	58	
55	28	47	1407	1.3982	58	
56	27	46	1655	1.4007	59	
57	27	45	1902	931	59	
58	26	43	2147	953	59	
59	26	42	2390	980	60	
60	8.509 7225	8.512 6641	0.12633	1.4104	5.6160	7.010

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 3°.

Lat.	log A	log B diff. 1" = -0.03	log C	log D	log E	log F
3 00	8.509 7225	8.512 0641	0.12633	1.4104	5.6160	7.010
1	25	39	2874	28	61	
2	24	38	3113	52	61	
3	24	37	3352	75	61	
4	24	35	3589	1.4199	62	
05	23	34	3825	1.4222	62	
6	23	33	4059	46	62	
7	22	31	4293	69	63	
8	22	30	4525	1.4292	63	
9	21	28	4756	1.4315	64	
10	8.509 7221	8.512 0627	0.14985	1.4338	5.6164	
11	20	26	5214	60	65	
12	20	24	5441	1.4383	65	
13	19	23	5667	1.4405	65	
14	19	21	5892	28	66	
15	18	20	6116	50	66	
16	18	18	6338	72	67	
17	17	17	6560	1.4494	67	
18	17	15	6780	1.4516	68	
19	16	14	6999	38	68	
20	8.509 7216	8.512 0612	0.17217	1.4560	5.6168	7.055
21	15	11	7434	1.4581	69	
22	15	09	7650	1.4603	69	
23	14	08	7865	24	70	
24	14	06	8079	45	70	
25	13	05	8292	66	71	
26	13	03	8504	1.4687	71	
27	12	02	8715	1.4708	72	
28	12	00	8925	29	72	
29	11	0599	9133	50	72	
30	8.509 7211	8.512 0597	0.19341	1.4770	5.6173	
31	10	96	9648	1.4791	73	
32	10	94	9754	1.4811	74	
33	09	92	9959	32	74	
34	09	91	20163	52	75	
35	08	89	0366	72	75	
36	08	88	0568	1.4892	76	
37	07	86	0769	1.4912	76	
38	07	84	0969	32	77	
39	06	83	1168	52	77	
40	8.509 7206	8.512 0581	0.21367	1.4971	5.6178	7.096
41	05	80	1564	1.4991	78	
42	04	78	1761	1.5011	79	
43	04	76	1956	30	79	
44	03	75	2151	49	80	
45	03	73	2345	68	80	
46	02	71	2538	1.5088	81	
47	02	69	2731	1.5107	81	
48	01	68	2922	26	81	
49	01	66	3113	45	82	
50	8.509 7200	8.512 0564	0.23302	1.5163	5.6182	
51	7199	63	3491	1.5182	83	
52	99	61	3680	1.5201	84	
53	98	59	3867	19	84	
54	98	58	4053	38	85	
55	97	56	4239	56	85	
56	96	54	4424	75	86	
57	96	52	4608	1.5293	86	
58	95	50	4792	1.5311	87	
59	95	49	4974	29	87	
60	8.509 7194	8.512 0547	0.25156	1.5347	5.6188	7.133

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 4°.

Lat. $\begin{smallmatrix} \circ \\ ' \end{smallmatrix}$	log A	log B diff. 1" = -0.04	log C	log D	log E	log F
4 00	8.509 7194	8.512 6547	0.25156	1.5347	5.6188	7.133
1	93	45	6337	65	88	
2	93	43	6518	1.5383	89	
3	92	42	5697	1.5401	89	
4	92	40	5876	18	90	
05	91	38	6055	36	90	
6	91	36	6232	64	91	
7	90	34	6409	71	91	
8	89	32	6585	1.5489	92	
9	89	31	6760	1.5506	92	
10	8.509 7188	8.512 6529	0.26935	1.5523	5.6193	
11	87	27	7109	40	93	
12	87	25	7282	58	94	
13	86	23	7455	75	95	
14	86	21	7627	1.5592	95	
15	85	19	7798	1.5609	96	
16	84	17	7968	25	96	
17	84	16	8138	42	97	
18	83	14	8308	59	97	
19	82	12	8476	76	98	
20	8.509 7182	8.512 6510	0.28644	1.5692	5.6199	7.168
21	81	08	8812	1.5709	5.6199	
22	80	06	8978	25	5.6200	
23	80	04	9144	42	00	
24	79	02	9310	58	01	
25	78	6500	9475	74	01	
26	78	6498	9639	1.5791	02	
27	77	96	9802	1.5807	03	
28	76	94	0.29985	23	03	
29	76	92	0.30128	39	04	
30	8.509 7175	8.512 6490	0.30290	1.5855	5.6204	
31	74	88	0451	71	05	
32	74	86	0611	1.5887	05	
33	73	84	0771	1.5902	06	
34	72	82	0931	18	07	
35	72	80	1090	34	07	
36	71	78	1248	50	08	
37	70	76	1406	65	08	
38	70	74	1563	81	09	
39	69	72	1719	1.5996	10	
40	8.509 7168	8.512 6470	0.31875	1.6011	5.6210	7.200
41	67	68	2031	27	11	
42	67	65	2186	42	12	
43	66	63	2340	57	12	
44	66	61	2491	73	13	
45	65	59	2647	1.6088	13	
46	64	57	2800	1.6103	14	
47	63	55	2953	18	15	
48	63	53	3104	33	15	
49	62	51	3255	48	16	
50	8.509 7161	8.512 6448	0.33406	1.6163	5.6216	
51	60	46	3556	77	17	
52	60	44	3706	1.6192	18	
53	59	42	3855	1.6207	18	
54	58	40	4004	21	19	
55	57	38	4152	36	21	
56	57	35	4300	51	20	
57	56	33	4447	65	21	
58	55	31	4594	80	22	
59	55	29	4740	1.6294	22	
60	8.509 7154	8.512 6427	0.34885	1.6308	5.6223	7.229

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 5°.

Lat.	log A	log B diff. 1" = -0.04	log C	log D diff. 1" = +0.22	log E.	log F
5 00	8.509 7154	8.512 6427	0.34885	1.6308	5.6223	7.229
1	53	24	5030	23	24	
2	53	22	5175	37	24	
3	52	20	5320	51	25	
4	51	18	5464	65	26	
05	50	15	5607	79	26	
6	49	13	5750	1.6393	27	
7	49	11	5892	1.6407	28	
8	48	08	6034	21	28	
9	47	06	6176	35	29	
10	8.509 7146	8.512 6404	0.36317	1.6449	5.6230	
11	46	6402	6457	63	30	
12	45	6399	6597	77	31	
13	44	97	6737	1.6491	32	
14	43	95	6876	1.6504	32	
15	43	92	7015	18	33	
16	42	90	7154	32	34	
17	41	88	7292	45	34	
18	40	85	7429	59	35	
19	39	83	7566	72	36	
20	8.509 7139	8.512 6381	0.37703	1.6586	5.6236	7.236
21	38	78	7699	1.6599	37	
22	37	76	7837	1.6612	38	
23	36	73	7975	26	38	
24	35	71	8111	39	39	
25	35	69	8246	52	40	
26	34	66	8380	65	41	
27	33	64	8514	78	41	
28	32	61	8648	1.6692	42	
29	31	59	8781	1.6705	43	
30	8.509 7131	8.512 6356	0.39047	1.6718	5.6243	
31	30	54	8917	31	44	
32	29	52	9031	44	45	
33	28	49	9142	56	46	
34	27	47	9253	69	46	
35	27	44	9364	82	47	
36	26	42	9474	1.6795	48	
37	25	39	9584	1.6808	48	
38	24	37	9694	20	49	
39	23	34	9803	33	50	
40	8.509 7122	8.512 6332	0.40351	1.6846	5.6251	7.282
41	21	29	9917	58	51	
42	21	27	10008	71	52	
43	20	24	10100	83	53	
44	19	21	10193	1.6896	54	
45	18	19	10286	1.6908	54	
46	17	16	10379	21	55	
47	16	14	10472	33	56	
48	16	11	10565	45	57	
49	15	09	10658	58	57	
50	8.509 7114	8.512 6306	0.41619	1.6970	5.6258	
51	13	03	10751	82	59	
52	12	6301	10843	1.6994	60	
53	11	6298	10935	1.7006	60	
54	10	96	11027	19	61	
55	09	93	11119	31	62	
56	09	90	11211	43	63	
57	08	88	11303	55	63	
58	07	85	11395	67	64	
59	06	82	11487	79	65	
60	8.509 7105	8.512 6280	0.42850	1.7090	5.6266	7.306

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 6°.

Lat.	log A diff. 1" = -0.02	log B diff. 1" = -0.05	log C	log D diff. 1" = +0.18	log E	log F
0						
6 00	8.509 7105	8.512 6280	0.42850	1.7090	5.6266	7.306
1	04	77	2972	7102	67	
2	08	74	3053	14	67	
3	02	72	3213	26	68	
4	01	69	3334	38	69	
05	01	66	3454	50	70	
6	7100	64	3573	61	70	
7	7089	61	3693	73	71	
8	98	58	3812	85	72	
9	97	55	3931	1.7196	73	
10	8.509 7096	8.512 6253	0.44049	1.7208	5.6274	
11	95	50	4167	19	74	
12	94	47	4285	31	75	
13	93	44	4402	42	76	
14	92	42	4519	54	77	
15	91	39	4636	65	78	
16	91	36	4753	76	78	
17	90	33	4869	88	79	
18	89	31	4985	1.7299	80	
19	88	28	5101	1.7310	81	
20	8.509 7087	8.512 6225	0.45216	1.7322	5.6282	7.329
21	86	22	5331	33	83	
22	85	19	5446	44	83	
23	84	16	5560	55	84	
24	83	14	5674	66	85	
25	82	11	5788	78	86	
26	81	08	5902	1.7389	87	
27	80	05	6015	1.7400	88	
28	79	6202	6128	11	88	
29	78	6199	6241	22	89	
30	8.509 7077	8.512 6196	0.46353	1.7433	5.6290	
31	76	94	6465	44	91	
32	75	91	6577	54	92	
33	74	88	6689	65	93	
34	73	85	6800	76	93	
35	72	82	6911	87	94	
36	71	79	7022	1.7498	95	
37	70	76	7132	1.7508	96	
38	70	73	7242	19	97	
39	69	70	7352	30	98	
40	8.509 7068	8.512 6167	0.47462	1.7541	5.6299	7.351
41	67	64	7571	51	5.6299	
42	66	61	7681	62	5.6300	
43	65	58	7789	73	01	
44	64	55	7898	83	02	
45	63	52	8006	1.7594	03	
46	62	49	8114	1.7604	04	
47	61	46	8222	15	05	
48	60	43	8330	25	06	
49	59	40	8437	36	06	
50	8.509 7058	8.512 6137	0.48544	1.7646	5.6207	
51	57	34	8651	56	08	
52	56	31	8757	67	09	
53	55	28	8864	77	10	
54	53	25	8970	87	11	
55	52	22	9075	1.7698	12	
56	51	19	9181	1.7708	13	
57	50	16	9286	18	13	
58	49	13	9391	28	14	
59	48	10	9496	38	15	
60	8.509 7047	8.512 6107	0.49600	1.7749	5.6216	7.371



TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 7°.

Lat.	log A diff. 1" = -0.02	log B diff. 1" = -0.06	log C	log D diff. 1" = +0.16	log E	log F
7 00	8.509 7047	8.512 6107	0.49600	1.7749	5.6316	7.371
1	46	03	705	59	17	
2	45	6106	809	69	18	
3	44	6097	0.49913	79	19	
4	43	94	0.50016	89	20	
05	42	91	119	1.7799	21	
6	41	88	222	1.7809	22	
7	40	85	325	19	23	
8	39	82	428	29	24	
9	38	78	530	39	24	
10	8.509 7037	8.512 6075	0.50632	1.7849	5.6325	
11	36	72	734	59	26	
12	35	69	836	68	27	
13	34	66	0.50937	78	28	
14	33	62	0.51039	88	29	
15	32	59	140	1.7898	30	
16	30	56	240	1.7908	31	
17	29	53	341	17	32	
18	28	50	441	27	33	
19	27	46	541	37	34	
20	8.509 7026	8.512 6043	0.51641	1.7946	5.6335	7.391
21	25	40	741	56	36	
22	24	37	840	66	37	
23	23	33	0.51939	75	37	
24	22	30	0.52038	85	38	
25	21	27	137	1.7994	39	
26	20	23	236	1.8004	40	
27	19	20	334	13	41	
28	17	17	432	23	42	
29	16	14	530	32	43	
30	8.509 7015	8.512 6010	0.52628	1.8042	5.6344	
31	14	07	725	51	45	
32	13	04	822	61	46	
33	12	0000	0.52919	70	47	
34	11	5997	0.53016	79	48	
35	10	94	113	89	49	
36	09	90	209	1.8098	50	
37	07	87	306	1.8107	51	
38	06	83	402	17	52	
39	05	80	497	26	53	
40	8.509 7004	8.512 5977	0.53593	1.8135	5.6354	7.409
41	03	73	688	44	55	
42	02	70	784	53	56	
43	01	66	879	63	57	
44	7000	63	0.53973	72	58	
45	6998	60	0.54068	81	59	
46	97	56	162	90	60	
47	96	53	257	1.8199	61	
48	95	49	351	1.8208	62	
49	94	46	444	17	63	
50	8.509 6993	8.512 5942	0.54538	1.8226	5.6364	
51	91	39	631	35	65	
52	90	35	725	44	66	
53	89	32	818	53	67	
54	88	28	0.54911	62	68	
55	87	25	0.55003	71	69	
56	86	21	096	80	70	
57	84	18	188	89	71	
58	83	14	280	1.8298	72	
59	82	11	372	1.8307	73	
60	8.509 6981	8.512 5907	0.55464	1.8315	5.6374	7.427

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 8°.

Lat.	log A diff. 1" = - 0.02	log B diff. 1" = - 0.06	log C	log D diff. 1" = + 0.14	log E diff. 1" = + 0.02	log F
0						
00	8.509 6981	8.512 5907	0.55464	1.8815	5.6374	7.427
1	80	04	555	24	75	
2	79	5900	646	33	76	
3	77	5897	738	42	77	
4	76	93	829	50	78	
05	75	90	0.55919	59	79	
6	74	86	0.56010	68	80	
7	73	82	100	77	81	
8	71	79	191	85	82	
9	70	75	281	1.8394	83	
10	8.509 6969	8.512 5872	0.56371	1.8403	5.6384	
11	68	68	460	12	85	
12	67	64	550	20	86	
13	65	61	639	28	87	
14	64	57	728	37	88	
15	63	54	817	45	90	
16	62	50	906	54	91	
17	61	46	0.56995	62	92	
18	59	43	0.57083	71	93	
19	58	39	172	79	94	
20	8.509 6957	8.512 5835	0.57260	1.8488	5.6395	7.444
21	56	32	348	1.8496	96	
22	54	28	436	1.8505	97	
23	53	24	523	13	98	
24	52	20	611	21	99	
25	51	17	698	30	5.6400	
26	49	13	785	38	5.6401	
27	48	09	872	46	02	
28	47	06	0.57959	55	03	
29	46	5802	0.58045	63	04	
30	8.509 6945	8.512 5798	0.58132	1.8571	5.6406	
31	43	94	218	80	07	
32	42	91	304	88	08	
33	41	87	390	1.8596	09	
34	39	83	476	1.8604	10	
35	38	79	562	13	11	
36	37	75	647	21	12	
37	36	72	732	29	13	
38	34	68	818	37	14	
39	33	64	903	45	15	
40	8.509 6932	8.512 5760	0.58987	1.8653	5.6416	7.461
41	31	56	0.59072	61	18	
42	29	53	157	69	19	
43	28	49	241	77	20	
44	27	45	325	85	21	
45	25	41	409	1.8693	22	
46	24	37	493	1.8701	23	
47	23	33	577	09	24	
48	22	29	660	17	25	
49	20	26	744	25	26	
50	8.509 6919	8.512 5722	0.59827	1.8733	5.6428	
51	18	18	910	41	29	
52	16	14	0.59933	49	30	
53	15	10	0.60076	57	31	
54	14	06	159	65	32	
55	12	5702	241	73	33	
56	11	5694	324	81	34	
57	10	94	406	89	35	
58	09	90	488	1.8796	37	
59	07	86	570	1.8804	38	
60	8.509 6906	8.512 5682	0.60652	1.8812	5.6439	7.476

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 9°.

Lat.	log A diff. 1" = -0.02	log B diff. 1" = -0.07	log C	log D diff. 1" = +0.12	log E diff. 1" = +0.02	log F
9 00	8.509 6906	8.512 5682	0.60652	1.8812	5.6439	7.478
1	05	78	788	20	40	
2	06	74	815	27	41	
3	02	70	896	36	42	
4	6901	66	0.70877	43	44	
05	6899	62	0.61056	51	45	
6	98	56	139	58	46	
7	97	54	230	66	47	
8	95	50	301	74	48	
9	94	46	381	81	49	
10	8.509 6898	8.512 5642	0.61461	1.8899	5.6450	
11	91	38	542	1.8897	52	
12	90	34	622	1.8904	53	
13	89	30	702	12	54	
14	87	26	781	19	55	
15	86	22	861	27	56	
16	84	18	0.61941	34	57	
17	83	14	0.62020	42	58	
18	82	10	099	50	59	
19	80	06	178	57	61	
20	8.509 6879	8.512 5602	0.62257	1.8964	5.6462	7.489
21	78	5598	386	72	63	
22	76	98	415	79	65	
23	75	89	498	87	66	
24	74	85	572	1.8994	67	
25	72	81	650	1.9002	68	
26	71	77	728	09	69	
27	69	73	806	17	70	
28	68	69	884	24	72	
29	67	64	0.62962	31	73	
30	8.509 6865	8.512 5560	0.63039	1.9089	5.6474	
31	64	56	117	46	75	
32	62	52	194	53	76	
33	61	48	271	61	78	
34	60	43	349	68	79	
35	58	39	426	75	80	
36	57	35	502	82	81	
37	55	31	579	90	83	
38	54	27	656	1.9097	84	
39	53	22	732	1.9104	85	
40	8.509 6851	8.512 5518	0.63808	1.9111	5.6486	7.505
41	50	14	885	19	87	
42	48	10	0.63961	26	89	
43	47	06	0.64037	33	90	
44	45	5601	112	40	91	
45	44	5497	188	47	92	
46	43	92	264	54	94	
47	41	88	339	61	95	
48	40	84	415	69	96	
49	38	80	490	76	97	
50	8.509 6837	8.512 5475	0.64565	1.9183	5.6498	
51	35	71	640	90	5.6500	
52	34	67	715	1.9197	01	
53	33	62	789	1.9204	02	
54	31	58	864	11	03	
55	30	54	0.64938	18	05	
56	28	49	0.65013	25	06	
57	27	45	087	32	07	
58	25	40	161	39	08	
59	24	36	235	46	10	
60	8.509 6822	8.512 5432	0.65309	1.9253	5.6411	7.518

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 10°.

Lat.		log A diff. 1" = -0.03	log B diff. 1" = -0.08	log C	log D diff. 1" = +0.11	log E diff. 1" = +0.02	log F
10	00	8.509 6822	8.512 5432	0.65909	1.9253	5.6511	7.518
	1	21	27	383	60	12	
	2	19	23	456	67	13	
	3	18	19	530	74	15	
	4	17	14	603	80	16	
	05	15	10	677	87	17	
	6	14	05	750	1.9294	18	
	7	12	5401	823	1.9301	20	
	8	11	5396	896	08	21	
	9	9	92	0.65968	15	22	
10		8.509 6808	8.512 5388	0.66041	1.9322	5.6524	
	11	06	83	114	28	25	
	12	05	79	186	35	26	
	13	03	74	259	42	27	
	14	02	70	331	49	29	
	15	6800	65	403	56	30	
	16	6799	61	475	62	31	
	17	97	56	547	69	33	
	18	96	52	619	76	34	
	19	94	47	691	82	35	
20		8.509 6793	8.512 5343	0.66762	1.9389	5.6536	7.532
	21	91	38	834	1.9396	38	
	22	90	33	905	1.9403	39	
	23	88	29	0.66976	09	40	
	24	87	24	0.67047	16	42	
	25	85	20	118	23	43	
	26	84	15	189	29	44	
	27	82	11	260	36	46	
	28	81	06	331	42	47	
	29	79	5302	401	49	48	
30		8.509 6777	8.512 5297	0.67472	1.9456	5.6549	
	31	76	92	542	62	51	
	32	74	88	613	69	52	
	33	73	83	683	75	53	
	34	71	79	753	82	55	
	35	70	74	823	88	56	
	36	68	69	893	1.9495	57	
	37	67	65	0.67962	1.9501	59	
	38	65	60	0.68032	08	60	
	39	64	55	102	14	61	
40		8.509 6762	8.512 5251	0.68171	1.9521	5.6563	7.544
	41	60	46	240	27	64	
	42	59	41	310	34	65	
	43	57	37	379	40	67	
	44	56	32	448	47	68	
	45	54	27	517	53	69	
	46	53	23	586	60	71	
	47	51	18	654	66	72	
	48	50	13	723	72	73	
	49	48	08	791	79	75	
50		8.509 6746	8.512 5204	0.68860	1.9585	5.6576	
	51	45	5199	928	91	78	
	52	43	94	0.68996	1.9598	79	
	53	42	89	0.69064	1.9604	80	
	54	40	85	132	10	82	
	55	38	80	200	17	83	
	56	37	75	268	23	84	
	57	35	70	336	29	86	
	58	34	66	404	36	87	
	59	32	61	471	42	88	
60		8.509 6730	8.512 5156	0.69539	1.9648	5.6590	7.556

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 11°.

Lat.	log A diff. 1" = -0.03	log B diff. 1" = -0.08	log C	log D diff. 1" = +0.10	log E diff. 1" = +0.02	log F
11 00	8.509 6730	8.512 5156	0.69539	1.9648	5.6590	7.556
1	29	51	606	54	91	
2	27	46	673	61	93	
3	26	41	740	67	94	
4	24	37	807	73	95	
05	22	32	874	79	97	
6	21	27	0.69941	86	98	
7	19	22	0.70008	92	5.6599	
8	18	17	074	1.9698	5.6601	
9	16	12	141	1.9704	02	
10	8.509 6714	8.512 5108	0.70208	1.9710	5.6604	
11	13	5103	274	16	05	
12	11	5098	340	23	06	
13	09	5093	406	29	08	
14	08	88	473	35	09	
15	06	83	539	41	11	
16	05	78	604	47	12	
17	03	73	670	53	13	
18	01	68	736	59	15	
19	6700	63	802	65	16	
20	8.509 6698	8.512 5058	0.70867	1.9771	5.6618	7.568
21	96	53	933	77	19	
22	95	49	0.70998	83	20	
23	93	44	0.71063	89	22	
24	91	39	128	1.9795	23	
25	90	34	194	1.9801	25	
26	88	29	259	07	26	
27	86	24	323	13	27	
28	85	19	388	19	29	
29	83	14	453	25	30	
30	8.509 6681	8.512 5009	0.71518	1.9831	5.6632	
31	80	04	582	37	33	
32	78	4999	647	43	35	
33	76	94	711	49	36	
34	75	89	775	55	37	
35	73	83	840	61	39	
36	71	78	904	67	40	
37	70	73	0.71968	73	42	
38	68	68	0.72032	79	43	
39	66	63	095	85	45	
40	8.509 6665	8.512 4958	0.72159	1.9890	5.6646	7.580
41	63	53	223	1.9896	47	
42	61	48	286	1.9902	49	
43	59	43	350	08	50	
44	58	38	413	14	52	
45	56	33	477	20	53	
46	54	28	540	25	55	
47	53	22	603	31	56	
48	51	17	666	37	58	
49	49	12	729	43	59	
50	8.509 6647	8.512 4907	0.72792	1.9949	5.6661	
51	46	4902	855	54	62	
52	44	4897	918	60	64	
53	43	92	0.72980	66	65	
54	41	86	0.73043	72	66	
55	39	81	106	77	68	
56	37	76	168	83	69	
57	35	71	230	89	71	
58	34	66	293	94	72	
59	32	60	355	1.9900	74	
60	8.509 6630	8.512 4855	0.73417	2.0006	5.6675	7.591

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 12°.

Lat.	log A diff. 1" = -0.03	log B diff. 1" = -0.09	log C	log D diff. 1" = +0.09	log E diff. 1" = +0.04	log F
°						
12 00	8.509 6630	8.512 4855	0.73417	2.0006	5.6675	7.591
1	29	50	479	11	77	
2	27	45	541	17	78	
3	25	39	603	23	80	
4	23	34	664	28	81	
05	21	29	726	34	83	
6	20	24	788	40	84	
7	18	18	849	45	86	
8	16	13	911	51	87	
9	14	08	0.73972	57	89	
10	8.509 6613	8.512 4803	0.74033	2.0062	5.6690	
11	11	4797	094	67	92	
12	09	92	156	73	93	
13	07	87	217	79	95	
14	06	81	278	84	96	
15	04	76	339	90	98	
16	02	71	399	2.0096	99	
17	6600	65	460	2.0101	5.6701	
18	6699	60	521	07	02	
19	97	55	581	12	04	
20	8.509 6596	8.512 4749	0.74642	2.0118	5.6705	7.601
21	93	44	702	23	07	
22	91	39	763	29	08	
23	90	33	823	34	10	
24	88	28	883	40	11	
25	86	23	0.74943	45	13	
26	84	17	0.75003	50	14	
27	82	12	063	56	16	
28	81	06	123	61	17	
29	79	4701	183	67	19	
30	8.509 6577	8.512 4696	0.75243	2.0172	5.6720	
31	75	90	302	77	22	
32	73	85	362	83	24	
33	72	79	422	88	25	
34	70	74	481	94	27	
35	68	68	540	2.0199	28	
36	66	63	600	2.0205	30	
37	64	57	659	10	31	
38	62	52	718	15	33	
39	61	46	777	21	34	
40	8.509 6559	8.512 4641	0.75836	2.0226	5.6736	7.611
41	57	35	895	32	37	
42	55	30	0.75964	37	39	
43	53	24	0.76013	42	41	
44	51	19	072	47	42	
45	50	13	130	53	44	
46	48	08	189	58	45	
47	46	4602	247	63	47	
48	44	4597	306	69	48	
49	42	91	364	74	50	
50	8.509 6540	8.512 4596	0.76422	2.0279	5.6751	
51	39	80	481	84	53	
52	37	75	539	90	55	
53	35	69	597	2.0295	56	
54	33	63	655	2.0300	58	
55	31	58	713	05	59	
56	29	52	771	10	61	
57	27	47	828	16	62	
58	25	41	886	21	64	
59	24	35	0.76944	26	66	
60	8.509 6522	8.512 4530	0.77001	2.0381	5.6767	7.621

TABLE 22 — *Geodetic position computations*—Continued.

LATITUDE 13°.

Lat.	log A diff. 1" = -0.03	log B diff. 1" = -0.10	log C diff. 1" = +0.93	log D diff. 1" = +0.08	log E diff. 1" = +0.03	log F
13 00	8.509 6522	8.512 4530	0.77001	2.0331	5.6767	7.631
1	20	24	059	36	69	
2	18	19	116	42	70	
3	16	13	174	47	72	
4	14	07	231	52	74	
05	12	4502	288	57	75	
6	10	4496	346	62	77	
7	09	90	403	67	78	
8	07	85	460	73	80	
9	05	79	517	78	82	
10	8.509 6503	8.512 4473	0.77574	2.0383	5.6783	
11	6501	67	630	88	85	
12	6499	62	687	93	86	
13	97	56	744	2.0398	88	
14	95	50	801	2.0403	90	
15	93	45	857	08	91	
16	91	39	914	13	93	
17	90	33	0.77970	18	94	
18	88	27	0.78027	23	96	
19	86	22	083	28	98	
20	8.509 6484	8.512 4416	0.78139	2.0433	5.6799	7.631
21	82	10	195	38	5.6801	
22	80	4404	251	44	03	
23	78	4399	307	49	04	
24	76	93	363	54	06	
25	74	87	419	59	07	
26	72	81	475	64	09	
27	70	76	531	69	11	
28	68	70	587	74	12	
29	66	64	642	78	14	
30	8.509 6464	8.512 4358	0.78698	2.0483	5.6816	
31	63	52	754	88	17	
32	61	46	809	93	19	
33	59	41	865	2.0498	20	
34	57	35	920	2.0503	22	
35	55	29	0.78975	08	24	
36	53	23	0.79030	13	25	
37	51	17	086	18	27	
38	49	11	141	23	29	
39	47	4305	196	28	30	
40	8.509 6445	8.512 4299	0.79251	2.0533	5.6832	7.640
41	43	94	306	38	34	
42	41	88	360	42	35	
43	39	82	415	47	37	
44	37	76	470	52	39	
45	35	70	525	57	40	
46	33	64	579	62	42	
47	31	58	634	67	44	
48	29	52	588	72	45	
49	27	46	743	76	47	
50	8.509 6425	8.512 4240	0.79797	2.0581	5.6849	
51	23	34	851	86	50	
52	21	28	905	91	52	
53	19	22	0.79960	2.0596	54	
54	17	16	0.80014	2.0601	55	
55	15	10	068	05	57	
56	13	4204	122	10	59	
57	11	4198	176	15	60	
58	09	92	230	20	62	
59	07	86	284	24	64	
60	8.509 6405	8.512 4180	0.80337	2.0629	5.6865	7.649

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 14°.

Lat.	log A diff. 1" = -0.08	log B diff. 1" = -0.10	log C diff. 1" = +0.87	log D diff. 1" = +0.08	log E diff. 1" = +0.08	log F
°						
14 00	8.509 6405	8.512 4180	0.80837	2.0629	5.6865	7.649
1	03	74	391	34	67	
2	6401	68	445	39	69	
3	6399	62	498	43	71	
4	97	56	552	48	72	
05	96	50	606	53	74	
6	93	44	659	58	76	
7	91	38	712	62	77	
8	89	32	765	67	79	
9	87	26	819	72	81	
10	8.509 6385	8.512 4120	0.80872	2.0676	5.6882	
11	83	14	925	81	84	
12	81	08	0.80978	86	86	
13	79	4101	0.81031	90	88	
14	77	4095	084	2.0696	89	
15	75	89	137	2.0700	91	
16	73	83	190	04	93	
17	71	77	243	09	94	
18	69	71	296	14	96	
19	67	65	348	18	98	
20	8.509 6365	8.512 4059	0.81401	2.0723	5.6900	7.658
21	63	52	453	28	01	
22	61	46	506	32	03	
23	58	40	558	36	05	
24	56	34	611	41	06	
25	54	28	663	46	08	
26	52	21	715	51	10	
27	50	15	767	55	12	
28	48	09	820	60	13	
29	46	4003	872	64	15	
30	8.509 6344	8.512 3997	0.81924	2.0769	5.6917	
31	42	90	0.81976	73	19	
32	40	84	0.82028	78	20	
33	38	78	080	83	22	
34	36	72	131	87	24	
35	34	65	183	92	26	
36	32	59	235	2.0796	27	
37	29	53	287	2.0801	29	
38	27	47	338	06	31	
39	25	40	390	10	33	
40	8.509 6323	8.512 3934	0.82441	2.0814	5.6934	7.667
41	21	28	493	19	36	
42	19	22	544	23	38	
43	17	15	596	28	40	
44	15	09	647	32	41	
45	13	3903	698	37	43	
46	11	3896	749	41	45	
47	08	90	800	46	47	
48	06	84	852	50	48	
49	04	77	903	54	50	
50	8.509 6302	8.512 3871	0.82954	2.0859	5.6952	
51	6300	65	0.83005	63	54	
52	6298	58	055	68	55	
53	96	52	106	72	57	
54	94	45	157	77	59	
55	92	39	208	81	61	
56	89	33	258	85	63	
57	87	26	309	90	64	
58	85	20	360	94	66	
59	83	13	410	2.0899	68	
60	8.509 6281	8.512 3807	0.83461	2.0903	5.6970	7.675



TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 15°.

Lat.	log A diff. 1" = -0.04	log B diff. 1" = -0.11	log C diff. 1" = +0.82	log D diff. 1" = +0.07	log E diff. 1" = +0.03	log F
15 00	8.509 6281	8.512 3807	0.83461	2.0003	5.6970	7.675
1	79	3801	511	07	72	
2	77	3794	561	12	73	
3	74	88	612	16	75	
4	72	81	662	21	77	
05	70	75	712	25	79	
6	68	68	762	29	80	
7	66	62	813	34	82	
8	64	56	863	38	84	
9	62	49	913	42	86	
10	8.509 6259	8.512 3743	0.83963	2.0047	5.6988	
11	57	36	0.84012	51	89	
12	55	30	062	55	91	
13	53	23	112	59	93	
14	51	17	162	64	95	
15	49	10	212	68	97	
16	46	3704	261	72	5.6999	
17	44	3697	311	77	5.7000	
18	42	91	361	81	02	
19	40	84	410	85	04	
20	8.509 6238	8.512 3677	0.84460	2.0090	5.7006	7.683
21	35	71	509	94	08	
22	33	64	558	2.0098	09	
23	31	58	608	2.1002	11	
24	29	51	657	07	13	
25	27	45	706	11	15	
26	24	38	755	15	17	
27	22	31	804	19	19	
28	20	25	854	23	20	
29	18	18	903	28	22	
30	8.509 6216	8.512 3612	0.84952	2.1032	5.7024	
31	14	3605	0.85001	36	26	
32	11	3598	049	40	28	
33	09	92	098	44	30	
34	07	85	147	49	31	
35	05	79	196	53	33	
36	02	72	245	57	35	
37	6200	65	293	61	37	
38	6198	59	342	65	39	
39	96	52	390	69	41	
40	8.509 6194	8.512 3545	0.85439	2.1074	5.7042	7.691
41	91	39	487	78	44	
42	89	32	536	82	46	
43	87	25	584	86	48	
44	85	19	633	90	50	
45	82	12	681	94	52	
46	80	3505	729	2.1099	54	
47	78	3498	777	2.1103	55	
48	76	92	825	07	57	
49	73	85	874	11	59	
50	8.509 6171	8.512 3478	0.85922	2.1115	5.7061	
51	69	71	0.85970	19	63	
52	67	65	0.86018	23	65	
53	64	58	066	27	67	
54	62	51	113	31	69	
55	60	44	161	35	70	
56	58	38	209	39	72	
57	55	31	257	44	74	
58	53	24	304	48	76	
59	51	17	352	52	78	
60	8.509 6149	8.512 3411	0.86400	2.1156	5.7080	7.698

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 16°.

Lat.	log A diff. 1" = -0.04	log B diff. 1" = -0.12	log C diff. 1" = +0.77	log D diff. 1" = +0.06	log E diff. 1" = +0.03	log F
16 00	8.509 6149	8.512 3411	0.86400	2.1156	5.7080	7.698
1	46	3404	447	60	82	
2	44	3397	495	64	84	
3	42	90	542	68	85	
4	40	88	590	72	87	
05	37	76	637	76	89	
6	35	70	684	80	91	
7	33	63	732	84	93	
8	30	56	779	88	95	
9	28	49	826	92	97	
10	8.509 6126	8.512 3342	0.86873	2.1196	5.7099	
11	24	35	921	2.1200	5.7101	
12	21	28	0.86968	04	03	
13	19	22	0.87015	08	04	
14	17	15	062	12	06	
15	14	08	109	16	08	
16	12	3301	156	20	10	
17	10	3294	202	24	12	
18	08	87	249	28	14	
19	06	80	296	32	16	
20	8.509 6103	8.512 3273	0.87343	2.1236	5.7118	7.706
21	6101	66	389	40	20	
22	6098	59	436	44	22	
23	96	52	483	47	24	
24	94	45	529	51	25	
25	91	39	576	55	27	
26	89	32	622	59	29	
27	87	25	669	63	31	
28	84	18	715	67	33	
29	82	11	761	71	35	
30	8.509 6080	8.512 3204	0.87808	2.1275	5.7137	
31	77	3197	854	79	39	
32	75	90	900	83	41	
33	73	83	947	87	43	
34	70	76	0.87993	90	45	
35	68	69	0.88039	94	47	
36	66	62	085	2.1298	49	
37	63	55	131	2.1302	51	
38	61	48	177	06	52	
39	59	41	223	10	54	
40	8.509 6056	8.512 3133	0.88269	2.1314	5.7156	7.712
41	54	26	315	17	58	
42	52	19	360	21	60	
43	49	12	406	25	62	
44	47	3105	452	29	64	
45	45	3098	498	33	66	
46	42	91	543	37	68	
47	40	84	589	40	70	
48	37	77	631	44	72	
49	35	70	680	48	74	
50	8.509 6033	8.512 3063	0.88726	2.1352	5.7176	
51	30	56	771	56	78	
52	28	48	816	59	80	
53	26	41	862	63	82	
54	23	34	907	67	84	
55	21	27	952	71	86	
56	18	20	0.88998	74	88	
57	16	13	0.89043	78	90	
58	14	3006	088	82	92	
59	11	2998	133	86	94	
60	8.509 6009	8.512 2991	0.89178	2.1390	5.7196	7.719

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 17°.

Lat.	log A diff. 1" = -0.04	log B diff. 1" = -0.12	log C diff. 1" = -0.73	log D diff. 1" = +0.06	log E diff. 1" = +0.03	log F
17 00	8.509 6009	8.512 2991	0.89178	2.1390	5.7196	7.719
1 1	06	84	223	95	97	
2 2	04	77	268	2.1397	99	
3 3	6002	70	313	2.1401	5.7201	
4 4	5999	62	358	04	03	
05 5	97	55	403	08	05	
6 6	94	48	448	12	07	
7 7	92	41	493	16	09	
8 8	90	34	538	19	11	
9 9	87	26	583	23	13	
10 10	8.509 5985	8.512 2919	0.89627	2.1427	5.7215	
11 11	82	12	672	30	17	
12 12	80	2906	717	34	19	
13 13	78	2897	761	38	21	
14 14	75	90	806	42	23	
15 15	73	83	850	45	25	
16 16	70	76	895	49	27	
17 17	68	68	939	53	29	
18 18	65	61	0.89984	56	31	
19 19	63	54	0.90028	60	33	
20 20	8.509 5961	8.512 2846	0.90072	2.1464	5.7235	7.726
21 21	58	39	117	67	37	
22 22	56	32	161	71	39	
23 23	53	24	205	75	41	
24 24	51	17	249	78	43	
25 25	48	10	294	82	45	
26 26	46	2802	338	85	47	
27 27	44	2795	382	89	49	
28 28	41	88	426	93	51	
29 29	39	80	470	2.1496	53	
30 30	8.509 5936	8.512 2773	0.90514	2.1500	5.7255	
31 31	34	66	558	04	57	
32 32	31	58	602	07	59	
33 33	29	51	646	11	61	
34 34	26	44	689	14	64	
35 35	24	36	733	18	66	
36 36	21	29	777	22	68	
37 37	19	21	821	25	70	
38 38	16	14	864	29	72	
39 39	14	2707	908	32	74	
40 40	8.509 5912	8.512 2699	0.90952	2.1536	5.7276	7.732
41 41	09	92	0.90995	39	78	
42 42	07	84	0.91039	43	80	
43 43	04	77	082	47	82	
44 44	5902	69	126	50	84	
45 45	5899	62	169	54	86	
46 46	97	55	212	57	88	
47 47	94	47	256	61	90	
48 48	92	40	299	64	92	
49 49	89	32	342	68	94	
50 50	8.509 5887	8.512 2625	0.91286	2.1571	5.7296	
51 51	84	17	429	75	5.7298	
52 52	82	10	472	78	5.7300	
53 53	79	2602	515	82	02	
54 54	77	2595	558	85	04	
55 55	74	87	601	89	06	
56 56	72	80	644	92	08	
57 57	69	72	687	96	11	
58 58	67	65	730	2.1599	13	
59 59	64	57	773	2.1603	15	
60 60	8.509 5862	8.512 2550	0.91816	2.1606	5.7317	7.738

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 18°.

Lat.	log A diff. 1" = -0.04	log B diff. 1" = -0.13	log C diff. 1" = +0.70	log D diff. 1" = +0.06	log E diff. 1" = +0.03	log F diff. 10" = +3.0
18 00	8.509 5862	8.512 2550	0.91816	2.1606	5.7317	7.738
1	59	42	859	10	19	
2	57	35	902	13	21	
3	54	27	945	17	23	
4	52	19	0.91987	20	25	
05	49	12	0.92030	24	27	
6	46	8.512 2504	073	27	29	
7	44	8.512 2497	115	31	31	
8	41	89	158	34	33	
9	39	81	201	38	35	
10	8.509 5836	8.512 2474	0.92243	2.1641	5.7337	
11	34	66	296	44	39	
12	31	59	328	48	41	
13	29	51	371	51	44	
14	26	43	413	55	46	
15	24	36	456	58	48	
16	21	28	498	62	50	
17	19	20	540	65	52	
18	16	13	582	68	54	
19	13	8.512 2405	625	72	56	
20	8.509 5811	8.512 2397	0.92667	2.1675	5.7358	7.744
21	08	90	709	79	60	
22	06	82	751	82	62	
23	03	74	793	85	64	
24	8.509 5801	67	836	89	67	
25	8.509 5798	59	878	92	69	
26	96	51	920	95	71	
27	93	44	0.92962	2.1699	73	
28	90	36	0.93004	2.1702	75	
29	88	28	046	06	77	
30	8.509 5785	8.512 2320	0.93088	2.1709	5.7379	
31	83	13	129	12	81	
32	80	8.512 2305	171	16	83	
33	78	8.512 2297	213	19	85	
34	75	90	255	22	88	
35	72	82	296	26	90	
36	70	74	338	29	92	
37	67	66	380	32	94	
38	65	58	421	36	96	
39	62	51	463	39	5.7398	
40	8.509 5759	8.512 2243	0.93505	2.1742	5.7400	7.750
41	57	35	546	46	02	
42	54	27	588	49	05	
43	52	19	629	52	07	
44	49	12	671	56	09	
45	46	8.512 2204	712	59	11	
46	44	8.512 2196	753	62	13	
47	41	88	795	65	15	
48	39	80	836	69	17	
49	36	72	877	72	19	
50	8.509 5733	8.512 2165	0.93919	2.1775	5.7422	
51	81	57	0.93960	79	24	
52	28	49	0.94001	82	26	
53	25	41	042	85	28	
54	23	33	083	88	30	
55	20	25	125	92	32	
56	18	17	166	96	34	
57	15	10	207	2.1798	37	
58	12	8.512 2102	248	2.1801	39	
59	10	8.512 2094	289	05	41	
60	8.509 5707	8.512 2086	0.94330	2.1808	5.7443	7.756

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 19°.

Lat.	log A diff. 1" = -0.04	log B diff. 1" = -0.13	log C diff. 1" = +0.67	log D diff. 1" = +0.05	log E diff. 1" = +0.04	log F diff. 10" = +2.7
19 00	8.509 5707	8.512 2086	0.94330	2.1808	5.7443	7.756
1	04	78	370	11	45	
2	8.509 5702	70	411	14	47	
3	8.509 5699	62	452	18	49	
4	96	54	493	21	52	
05	94	46	534	24	54	
6	91	38	575	27	56	
7	89	30	615	30	58	
8	86	22	656	34	60	
9	83	14	697	37	62	
10	8.509 5681	8.512 2006	0.94737	2.1840	5.7464	
11	78	8.512 1999	778	43	67	
12	75	91	819	46	69	
13	73	83	859	50	71	
14	70	75	900	53	73	
15	67	67	940	56	75	
16	65	59	0.94981	59	78	
17	62	51	0.95021	62	80	
18	59	43	061	66	82	
19	57	35	102	69	84	
20	8.509 5654	8.512 1927	0.95142	2.1872	5.7486	7.761
21	52	19	182	75	88	
22	49	11	223	78	91	
23	46	8.512 1903	263	81	93	
24	43	8.512 1895	303	84	95	
25	41	87	344	88	97	
26	38	79	384	91	5.7499	
27	35	71	424	94	5.7501	
28	33	63	464	2.1897	04	
29	30	55	504	2.1900	06	
30	8.509 5627	8.512 1847	0.95544	2.1903	5.7508	
31	25	38	584	07	10	
32	22	30	624	10	12	
33	19	22	664	13	15	
34	16	14	704	16	17	
35	14	8.512 1806	744	19	19	
36	11	8.512 1798	784	22	21	
37	08	90	824	25	23	
38	06	82	863	28	25	
39	03	74	903	31	28	
40	8.509 5600	8.512 1766	0.95943	2.1934	5.7530	7.767
41	8.509 5598	57	0.95983	38	32	
42	95	49	0.96022	41	34	
43	92	41	062	44	37	
44	89	33	102	47	39	
45	87	25	142	50	41	
46	84	17	181	53	43	
47	81	08	221	56	46	
48	78	8.512 1700	260	59	48	
49	76	8.512 1692	300	62	50	
50	8.509 5573	8.512 1684	0.96339	2.1965	5.7552	
51	70	75	379	68	54	
52	68	67	418	71	57	
53	65	59	457	74	59	
54	62	51	497	77	61	
55	59	43	536	80	63	
56	57	34	575	83	65	
57	54	26	615	86	68	
58	51	18	654	89	70	
59	48	10	693	92	72	
60	8.509 5546	8.512 1602	0.96733	2.1996	5.7574	7.772

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 20°.

Lat.	log A diff. 1" = -0.05	log B diff. 1" = -0.11	log C diff. 1" = +0.64	log D diff. 1" = +0.05	log E diff. 1" = +0.04	log F diff. 10' = +2.5
20 00	8.509 5546	8.512 1602	0.96733	2.1996	5.7574	7.772
1	43	8.512 1593	772	2.1999	77	
2	40	85	811	2.2002	79	
3	37	77	850	05	81	
4	35	68	889	08	83	
5	32	60	928	11	86	
6	29	52	0.96967	14	88	
7	26	44	0.97006	17	90	
8	24	36	045	20	92	
9	21	27	084	23	94	
10	8.509 5518	8.512 1519	0.97123	2.2026	5.7597	
11	15	10	162	28	5.7599	
12	12	8.512 1502	201	31	5.7601	
13	10	8.512 1494	240	34	08	
14	07	85	279	37	06	
15	04	77	318	40	08	
16	8.509 5501	69	356	43	10	
17	8.509 5499	60	395	46	12	
18	96	52	434	49	15	
19	93	44	472	52	17	
20	8.509 5490	8.512 1435	0.97511	2.2055	5.7619	7.777
21	87	27	550	58	21	
22	85	18	588	61	24	
23	82	10	627	64	26	
24	79	8.512 1402	666	67	28	
25	76	8.512 1393	704	70	30	
26	73	85	743	73	33	
27	71	76	781	76	35	
28	68	68	819	79	37	
29	65	60	858	81	40	
30	8.509 5462	8.512 1351	0.97896	2.2084	5.7642	
31	59	43	935	87	44	
32	57	34	0.97973	90	46	
33	54	26	0.98011	93	49	
34	51	17	050	96	51	
35	48	09	088	2.2099	53	
36	45	8.512 1301	126	2.2102	55	
37	42	8.512 1292	164	05	58	
38	40	84	203	08	60	
39	37	75	241	10	62	
40	8.509 5434	8.512 1267	0.98279	2.2113	5.7664	7.782
41	31	58	317	16	67	
42	28	50	355	19	69	
43	25	41	393	22	71	
44	23	33	431	25	74	
45	20	24	469	28	76	
46	17	16	507	31	78	
47	14	8.512 1207	545	33	81	
48	11	8.512 1199	583	36	83	
49	08	90	621	39	85	
50	8.509 5406	8.512 1182	0.98659	2.2142	5.7688	
51	03	73	697	45	90	
52	8.509 5400	64	735	48	92	
53	8.509 5397	56	773	50	94	
54	94	47	811	53	97	
55	91	39	848	56	5.7699	
56	88	30	886	59	5.7701	
57	86	21	924	62	04	
58	83	13	962	65	06	
59	80	8.512 1104	0.98999	67	08	
60	8.509 5377	8.512 1096	0.99037	2.2170	5.7711	7.787

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 21°.

Lat.	log A diff. 1" = -0.05	log B diff. 1" = -0.15	log C diff. 1" = +0.062	log D diff. 1" = +0.04	log E diff. 1" = +0.04	log F diff. 10" = +2.2
21 00	8.509 5377	8.512 1096	0.99037	2.2170	5.7711	7.787
1	74	87	075	73	13	
2	71	79	112	76	15	
3	68	70	150	79	18	
4	66	62	187	81	20	
05	63	53	225	84	22	
6	60	45	262	87	24	
7	57	36	300	90	27	
8	54	27	337	93	29	
9	51	19	375	95	31	
10	8.509 5348	8.512 1010	0.99412	2.2198	5.7734	
11	46	8.512 1002	450	2.2201	36	
12	43	8.512 0993	487	04	38	
13	40	84	524	07	41	
14	37	76	562	09	43	
15	34	67	599	12	45	
16	31	58	636	15	48	
17	28	50	673	18	50	
18	25	41	711	20	52	
19	22	32	748	23	55	
20	8.509 5320	8.512 0924	0.99785	2.2226	5.7757	7.791
21	17	15	822	29	59	
22	14	8.512 0906	859	31	62	
23	11	8.512 0897	896	34	64	
24	08	89	933	37	66	
25	05	80	0.99971	40	69	
26	8.509 5302	71	1.00008	42	71	
27	8.509 5299	62	045	45	73	
28	96	54	082	48	76	
29	93	45	119	50	78	
30	8.509 5290	8.512 0836	1.00156	2.2253	5.7780	
31	88	27	192	56	83	
32	85	19	229	59	85	
33	82	10	266	61	87	
34	79	8.512 0801	303	64	90	
35	76	8.512 0792	340	67	92	
36	73	84	377	69	94	
37	70	75	413	72	97	
38	67	66	450	75	5.7799	
39	64	57	487	78	5.7802	
40	8.509 5261	8.512 0748	1.00524	2.2280	5.7804	7.796
41	58	39	500	83	06	
42	55	31	537	86	09	
43	52	22	574	88	11	
44	49	13	610	91	13	
45	46	8.512 0704	707	94	16	
46	44	8.512 0695	743	96	18	
47	41	86	780	2.2299	20	
48	38	78	816	2.2301	23	
49	35	69	853	04	25	
50	8.509 5232	8.512 0660	1.00890	2.2307	5.7828	
51	29	51	926	09	30	
52	26	42	962	12	32	
53	23	33	1.00999	15	35	
54	20	24	1.01035	17	37	
55	17	15	072	20	40	
56	14	8.512 0606	108	23	42	
57	11	8.512 0598	144	25	44	
58	08	89	181	28	47	
59	05	80	217	31	49	
60	8.509 5202	8.512 0571	1.01253	2.2333	5.7851	7.800

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 22°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.15	log C diff. 1" = +0.59	log D diff. 1" = +0.04	log E diff. 1" = +0.04	log F diff. 10" = +2.0
22 00	8.509 5202	8.512 0671	1.01253	2.2333	5.7851	7.800
1	8.509 5199	62	289	36	54	
2	96	53	326	38	56	
3	98	44	362	41	59	
4	90	35	398	44	61	
05	87	26	434	46	63	
6	84	17	470	49	66	
7	81	8.512 0508	506	51	68	
8	78	8.512 0499	542	54	71	
9	75	90	578	57	73	
10	8.509 5172	8.512 0481	1.01615	2.2359	5.7875	
11	69	72	651	62	78	
12	66	63	687	64	80	
13	63	54	723	67	83	
14	60	45	759	70	86	
15	57	36	794	72	87	
16	54	27	830	75	90	
17	51	18	866	77	92	
18	48	09	902	80	95	
19	45	8.512 0400	938	83	97	
20	8.509 5142	8.512 0391	1.01974	2.2385	5.7899	7.804
21	39	82	1.02010	88	5.7902	
22	36	73	045	90	04	
23	33	64	081	93	07	
24	30	55	117	96	09	
25	27	46	153	2.2398	11	
26	24	37	188	2.2400	14	
27	21	28	224	03	16	
28	18	19	260	06	19	
29	15	10	295	08	21	
30	8.509 5112	8.512 0301	1.02331	2.2411	5.7924	
31	09	8.512 0292	367	13	26	
32	06	83	402	16	28	
33	03	73	438	18	31	
34	8.509 5100	64	473	21	33	
35	8.509 5097	55	509	23	36	
36	94	46	544	26	38	
37	91	37	580	28	41	
38	88	28	615	31	43	
39	85	19	651	33	46	
40	8.509 5082	8.512 0210	1.02686	2.2436	5.7948	7.808
41	79	8.512 0200	721	38	50	
42	76	8.512 0191	757	41	53	
43	72	82	792	43	56	
44	69	73	828	46	58	
45	66	64	863	48	60	
46	63	55	898	51	62	
47	60	46	933	53	65	
48	57	36	1.02969	56	67	
49	54	27	1.03004	58	70	
50	8.509 5051	8.512 0118	1.03039	2.2461	5.7972	
51	48	09	074	63	75	
52	45	8.512 0100	109	66	77	
53	42	8.512 0090	145	68	80	
54	39	81	180	70	82	
55	36	72	215	73	84	
56	33	63	250	75	87	
57	30	54	286	78	89	
58	27	44	320	80	92	
59	23	35	355	83	94	
60	8.509 5020	8.512 0028	1.03390	2.2485	5.7997	7.812



TABLE 22.—*Geodetic position computations—Continued*

LATITUDE 23°.

Lat.	log A diff. 1° = -0.05	log B diff. 1° = -0.16	log C diff. 1° = +0.57	log D diff. 1° = +0.04	log E diff. 1° = +0.04	log F diff. 10' = +1.8
23 00	8.509 5020	8.512 0026	1.03390	2.2485	5.7997	7.812
1	17	17	425	88	5.7999	
2	14	8.512 0008	460	90	5.8002	
3	11	8.511 9998	495	93	04	
4	08	89	530	95	07	
05	05	80	565	2.2497	09	
6	8.509 5002	71	600	2.2500	12	
7	8.509 4999	61	634	02	14	
8	96	52	669	05	16	
9	93	43	704	07	19	
10	8.509 4990	8.511 9934	1.03739	2.2510	5.8021	
11	87	24	774	12	24	
12	83	15	809	14	26	
13	80	8.511 9906	843	17	29	
14	77	8.511 9896	878	19	31	
15	74	87	913	22	34	
16	71	78	947	24	36	
17	68	68	1.03382	26	39	
18	65	59	1.04017	29	41	
19	62	50	052	31	44	
20	8.509 4959	8.511 9840	1.04086	2.2534	5.8046	7.816
21	55	31	121	36	49	
22	52	22	155	38	51	
23	49	12	190	41	54	
24	46	8.511 9803	224	43	56	
25	43	8.511 9794	259	45	59	
26	40	84	293	48	61	
27	37	75	328	50	64	
28	34	66	362	53	66	
29	31	56	397	55	69	
30	8.509 4927	8.511 9747	1.04431	2.2557	5.8071	
31	24	37	466	60	74	
32	21	28	500	62	76	
33	18	19	534	64	79	
34	15	09	569	67	81	
35	12	8.511 9700	603	69	84	
36	09	8.511 9690	637	71	86	
37	05	81	672	74	89	
38	8.509 4902	71	706	76	91	
39	8.509 4899	62	740	78	93	
40	8.509 4896	8.511 9653	1.04775	2.2581	5.8096	7.819
41	93	43	809	83	5.8099	
42	90	34	843	85	5.8101	
43	87	24	877	88	04	
44	83	15	911	90	06	
45	80	8.511 9605	945	92	09	
46	77	8.511 9596	1.04980	95	11	
47	74	86	1.05014	97	14	
48	71	77	048	2.2599	16	
49	68	67	082	2.2601	19	
50	8.509 4865	8.511 9558	1.05116	2.2604	5.8121	
51	61	48	150	06	24	
52	58	39	184	09	26	
53	55	29	218	11	29	
54	52	20	252	13	31	
55	49	10	286	16	34	
56	45	8.511 9501	320	18	36	
57	42	8.511 9491	354	20	39	
58	39	82	388	23	41	
59	36	72	422	25	44	
60	8.509 4833	8.511 9463	1.05456	2.2627	5.8146	7.823

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 24°.

Lat.	log A diff. 1" = -0.05	log B diff. 1" = -0.16	log C diff. 1" = +0.56	log D diff. 1" = +0.04	log E diff. 1" = +0.04	log F diff. 10' = +1.6
24 00	8.509 4833	8.511 9463	1.06456	2.2627	5.8146	7.823
1	30	53	490	29	49	
2	26	44	523	31	51	
3	23	34	557	34	54	
4	20	24	591	36	57	
05	17	15	625	38	59	
6	14	8.511 9406	658	41	62	
7	10	8.511 9396	692	43	64	
8	07	86	726	45	67	
9	04	77	760	47	69	
10	8.509 4801	8.511 9367	1.05794	2.2650	5.8172	
11	8.509 4798	58	827	52	74	
12	94	48	861	54	77	
13	91	38	894	56	79	
14	88	29	928	59	82	
15	85	19	962	61	85	
16	82	09	1.06995	63	87	
17	78	8.511 9300	1.06029	65	90	
18	75	8.511 9290	062	68	92	
19	72	81	096	70	95	
20	8.509 4769	8.511 9271	1.06130	2.2672	5.8197	7.826
21	66	61	163	74	5.8200	
22	62	52	197	77	02	
23	59	42	230	79	05	
24	56	32	263	81	07	
25	53	23	297	83	10	
26	50	13	330	85	13	
27	46	8.511 9203	364	88	15	
28	43	8.511 9194	397	90	18	
29	40	84	431	92	20	
30	8.509 4737	8.511 9174	1.06464	2.2694	5.8223	
31	33	65	497	96	25	
32	30	55	530	2.2699	28	
33	27	45	564	2.2701	31	
34	24	35	597	03	33	
35	20	26	630	05	36	
36	17	16	664	07	38	
37	14	8.511 9106	697	10	41	
38	11	8.511 9096	730	12	43	
39	07	87	763	14	46	
40	8.509 4704	8.511 9077	1.06797	2.2716	5.8249	7.829
41	8.509 4701	67	830	18	51	
42	8.509 4698	58	863	20	54	
43	94	48	896	23	56	
44	91	38	929	25	59	
45	88	28	962	27	61	
46	85	18	1.06995	29	64	
47	81	8.511 9009	1.07028	31	67	
48	78	8.511 8999	061	33	69	
49	75	89	095	36	72	
50	8.509 4672	8.511 8979	1.07128	2.2738	5.8274	
51	68	70	161	40	77	
52	65	60	194	42	80	
53	62	50	226	44	82	
54	59	40	259	46	85	
55	55	30	292	49	87	
56	52	21	325	51	90	
57	49	11	358	53	92	
58	46	8.511 8901	391	55	95	
59	42	8.511 8891	424	57	5.8298	
60	8.509 4639	8.511 8881	1.07457	2.2759	5.8300	7.832

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 25°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.16	log C diff. 1" = +0.54	log D diff. 1" = +0.08	log E diff. 1" = +0.04	log F diff. 10" = +1.5
25 00	8.509 4639	8.511 8881	1.07457	2.2759	5.8300	7.832
1	36	71	490	61	03	
2	32	62	523	63	05	
3	29	52	555	66	06	
4	26	42	588	68	11	
05	23	32	621	70	13	
6	19	22	654	72	16	
7	16	12	687	74	18	
8	13	8.511 8902	719	76	21	
9	09	8.511 8793	752	78	24	
10	8.509 4606	8.511 8783	1.07785	2.2780	5.8326	
11	03	73	817	82	29	
12	8.509 4600	63	850	85	32	
13	8.509 4596	53	883	87	34	
14	93	43	915	89	37	
15	90	33	948	91	39	
16	86	23	1.07981	93	42	
17	83	13	1.08013	95	45	
18	80	8.511 8704	046	97	47	
19	76	8.511 8694	078	2.2799	50	
20	8.509 4573	8.511 8684	1.08111	2.2801	5.8352	7.835
21	70	74	143	03	55	
22	66	64	176	05	59	
23	63	54	208	07	60	
24	60	44	241	10	63	
25	56	34	273	12	66	
26	53	24	306	14	68	
27	50	14	338	16	71	
28	46	8.511 8604	370	18	73	
29	43	8.511 8594	403	20	76	
30	8.509 4540	8.511 8584	1.08435	2.2822	5.8379	
31	37	74	468	24	81	
32	33	64	500	26	84	
33	30	54	532	28	87	
34	26	44	565	30	89	
35	23	34	597	32	92	
36	20	24	629	34	94	
37	17	14	662	36	5.8397	
38	13	8.511 8504	694	38	5.8400	
39	10	8.511 8494	726	40	02	
40	8.509 4507	8.511 8484	1.08758	2.2842	5.8405	7.838
41	03	74	791	44	08	
42	8.509 4500	64	823	46	10	
43	8.509 4496	54	855	48	13	
44	93	44	887	50	16	
45	90	34	919	52	18	
46	86	24	951	54	21	
47	83	14	1.08984	56	24	
48	80	8.511 8404	1.09016	58	26	
49	76	8.511 8393	048	60	29	
50	8.509 4473	8.511 8383	1.09080	2.2862	5.8431	
51	70	73	112	64	34	
52	66	63	144	66	37	
53	63	53	176	68	39	
54	60	43	208	70	42	
55	56	33	240	72	45	
56	53	23	272	74	47	
57	50	13	304	76	50	
58	46	8.511 8303	336	78	53	
59	43	8.511 8293	368	80	55	
60	8.509 4439	8.511 8283	1.09400	2.2882	5.8458	7.841

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 26°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.17	log C diff. 1" = +0.52	log D diff. 1" = +0.08	log E diff. 1" = +0.04	log F diff. 10" = +1.3
26 00	8.509 4439	8.511 8283	1.09400	2.2882	5.8458	7.841
1	36	72	432	84	61	
2	33	62	464	86	63	
3	29	52	496	88	66	
4	26	42	527	90	69	
05	22	32	559	92	71	
6	19	22	591	94	74	
7	16	12	623	96	77	
8	12	8.511 8201	655	2.2888	79	
9	09	8.511 8191	687	2.2900	82	
10	8.509 4406	8.511 8181	1.09718	2.2902	5.8485	
11	8.509 4402	71	750	04	88	
12	8.509 4399	61	782	06	90	
13	95	51	814	08	93	
14	92	40	846	10	96	
15	88	30	877	12	5.8496	
16	85	20	909	14	5.8501	
17	82	10	940	16	04	
18	78	8.511 8100	1.09872	18	06	
19	75	8.511 8089	1.10004	20	09	
20	8.509 4372	8.511 8079	1.10036	2.2922	5.8512	7.844
21	68	69	067	23	14	
22	65	59	099	25	17	
23	61	48	130	27	20	
24	58	38	162	29	22	
25	54	28	194	31	25	
26	51	18	225	33	28	
27	49	8.511 8008	257	35	30	
28	44	8.511 7997	288	37	33	
29	41	87	320	39	36	
30	8.509 4337	8.511 7977	1.10351	2.2941	5.8539	
31	34	67	383	43	41	
32	31	56	414	45	44	
33	27	46	446	47	47	
34	24	36	477	48	49	
35	20	-25	509	50	52	
36	17	15	540	52	55	
37	13	8.511 7906	571	54	57	
38	10	8.511 7895	603	56	60	
39	07	84	634	58	63	
40	8.509 4303	8.511 7874	1.10666	2.2960	5.8566	7.846
41	8.509 4300	64	697	62	68	
42	8.509 4296	53	728	63	71	
43	93	43	760	65	74	
44	89	33	791	67	76	
45	86	22	822	69	79	
46	83	12	854	71	82	
47	79	8.511 7802	885	73	85	
48	76	8.511 7791	916	75	87	
49	72	81	947	77	90	
50	8.509 4269	8.511 7771	1.10979	2.2978	5.8593	
51	65	60	1.11010	80	95	
52	62	50	041	82	5.8598	
53	58	40	072	84	5.8601	
54	55	29	103	86	04	
55	52	19	134	88	06	
56	48	8.511 7709	166	89	09	
57	45	8.511 7698	197	91	12	
58	41	88	228	93	14	
59	38	77	259	95	17	
60	8.509 4234	8.511 7667	1.11290	2.2997	5.8620	7.849

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 27°.

Lat.	log A		log B		log C		log D		log E		log F	
	diff. 1"=−0.06		diff. 1"=−0.18		diff. 1"=+0.51		diff. 1"=+0.03		diff. 1"=+0.05		diff. 10"=+1.1	
27 00	8.509 4234		8.511 7667		1.11290		2.2997		5.8620		7.849	
1	31		57		321		2.2999		23			
2	27		46		352		2.3001		25			
3	24		36		383		03		28			
4	20		25		414		04		31			
05	17		15		445		06		34			
6	13	8.511 7605		476		08		36				
7	10	8.511 7594		507		10		39				
8	06		84		538		12		42			
9	03		73		569		14		44			
10	8.509 4200		8.511 7563		1.11600		2.3015		5.8647			
11	8.509 4196		53		631		17		50			
12	93		42		662		19		53			
13	89		32		693		21		56			
14	86		21		724		23		58			
15	82		11		755		24		61			
16	79	8.511 7500		786		26		64				
17	75	8.511 7490		817		28		66				
18	72		79		848		30		69			
19	68		69		878		32		72			
20	8.509 4165		8.511 7458		1.11909		2.3033		5.8675		7.851	
21	61		48		940		35		77			
22	58		37		1.11971		37		80			
23	54		27		1.12002		39		83			
24	51		16		032		41		86			
25	47	8.511 7406		063		42		88				
26	44	8.511 7395		094		44		91				
27	40		85		125		46		94			
28	37		74		156		48		97			
29	33		64		186		50		5.8699			
30	8.509 4130		8.511 7353		1.12217		2.3051		5.8702			
31	26		43		248		53		05			
32	23		32		278		55		08			
33	19		22		309		57		10			
34	16		11		340		58		13			
35	12	8.511 7301		370		60		16				
36	08	8.511 7290		401		62		19				
37	05		80		432		64		22			
38	8.509 4101		69		462		65		24			
39	8.509 4098		58		493		67		27			
40	8.509 4094		8.511 7248		1.12523		2.3069		5.8730		7.853	
41	91		37		554		70		33			
42	87		27		584		72		35			
43	84		16		615		74		38			
44	80	8.511 7206		646		76		41				
45	77				676		78		44			
46	73	8.511 7195		707		79		46				
47	70		84		737		81		49			
48	66		63		768		83		52			
49	63		53		798		85		55			
50	8.509 4059		8.511 7142		1.12829		2.3086		5.8757			
51	56		31		859		88		60			
52	52		21		889		90		63			
53	49		10		920		91		66			
54	45	8.511 7100		950		93		69				
55	41				1.12981		95		72			
56	38	8.511 7089		78		1.13011		97		74		
57	34		68		041		2.3099		77			
58	31		57		072		2.3100		80			
59	27		46		102		02		83			
60	8.509 4024		8.511 7036		1.13132		2.3104		5.8785		7.855	

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 28°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.18	log C diff. 1" = +0.50	log D diff. 1" = +0.03	log E diff. 1" = +0.05	log F diff. 10" = +1.0
28 00	8.509 4024	8.511 7036	1.13132	2.3104	5.8785	7.856
1	20	25	163	06	88	
2	17	14	193	07	91	
3	13	8.511 7004	223	09	94	
4	10	8.511 6993	254	10	97	
05	06	82	284	12	5.8799	
6	8.509 4002	72	314	14	5.8802	
7	8.509 3999	61	345	16	05	
8	95	50	375	17	08	
9	92	40	405	19	11	
10	8.509 3988	8.511 6929	1.13435	2.3121	5.8813	
11	85	18	465	22	16	
12	81	8.511 6908	496	24	19	
13	78	8.511 6897	526	26	22	
14	74	86	556	27	25	
15	70	75	586	29	27	
16	67	65	616	31	30	
17	63	54	646	32	33	
18	60	43	677	34	36	
19	56	33	707	36	39	
20	8.509 3962	8.511 6822	1.13737	2.3137	5.8841	7.857
21	49	11	767	39	44	
22	45	8.511 6800	797	41	47	
23	42	8.511 6790	827	42	50	
24	38	79	857	44	53	
25	35	68	887	46	55	
26	31	57	917	47	58	
27	27	47	947	49	61	
28	24	36	1.13977	51	64	
29	20	25	1.14007	52	67	
30	8.509 3917	8.511 6714	1.14037	2.3154	5.8870	
31	13	8.511 6704	067	56	72	
32	09	8.511 6693	097	57	75	
33	06	82	127	59	78	
34	8.509 3902	71	157	61	81	
35	8.509 3899	61	187	62	84	
36	95	50	217	64	87	
37	92	39	247	65	89	
38	88	28	277	67	92	
39	84	17	307	69	95	
40	8.509 3881	8.511 6607	1.14337	2.3170	5.8898	7.859
41	77	8.511 6596	366	72	5.8901	
42	73	85	396	74	04	
43	70	74	426	75	06	
44	66	63	456	77	09	
45	63	52	486	78	12	
46	59	42	516	80	15	
47	55	31	545	82	18	
48	52	20	575	83	21	
49	48	8.511 6509	605	85	23	
50	8.509 3845	8.511 6498	1.14635	2.3187	5.8926	
51	41	87	664	88	29	
52	37	76	694	90	32	
53	34	66	724	91	35	
54	30	55	754	93	38	
55	26	44	783	95	40	
56	23	33	813	96	43	
57	19	22	843	98	46	
58	16	11	872	2.3199	49	
59	12	8.511 6400	902	2.3201	52	
60	8.509 3808	8.511 6389	1.14932	2.3203	5.8955	7.861

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 29°.

Lat.	log A diff. 1'' = -0.06	log B diff. 1'' = -0.18	log C diff. 1'' = +0.49	log D diff. 1'' = +0.03	log E diff. 1'' = +0.05	log F diff. 10'' = +0.8
29 00	8.509 3808	8.511 6389	1.14932	2.3203	5.8955	7.861
1	05	78	961	04	58	
2	8.509 3801	68	1.14991	06	60	
3	8.509 3797	57	1.15021	07	63	
4	94	46	050	09	66	
05	90	35	080	10	69	
6	86	24	109	12	72	
7	83	13	139	14	75	
8	79	8.511 6302	168	15	78	
9	76	8.511 6291	198	17	80	
10	8.509 3772	8.511 6280	1.15228	2.3218	5.8983	
11	68	69	287	20	86	
12	65	58	287	21	89	
13	61	47	316	23	92	
14	57	36	346	25	95	
15	54	26	375	26	5.8998	
16	50	15	405	28	5.9000	
17	46	8.511 6204	434	29	63	
18	43	8.511 6193	464	31	66	
19	39	82	493	32	69	
20	8.509 3735	8.511 6171	1.15522	2.3234	5.9012	7.863
21	32	60	552	35	15	
22	28	49	581	37	18	
23	24	38	611	38	21	
24	21	27	640	40	23	
25	17	16	670	42	26	
26	13	8.511 6105	699	43	29	
27	10	8.511 6094	728	45	32	
28	06	85	758	46	35	
29	8.509 3702	72	787	48	38	
30	8.509 3699	8.511 6061	1.15816	2.3249	5.9041	
31	95	50	846	51	43	
32	91	39	875	52	46	
33	88	28	904	54	49	
34	84	17	934	55	52	
35	80	8.511 6006	963	57	55	
36	77	8.511 5995	1.15992	58	58	
37	73	84	1.16021	60	61	
38	69	73	051	61	64	
39	66	61	080	63	67	
40	8.509 3662	8.511 5950	1.16109	2.3264	5.9069	7.864
41	58	39	138	66	72	
42	55	28	167	67	75	
43	51	17	197	69	78	
44	47	8.511 5906	226	70	81	
45	44	8.511 5895	255	72	84	
46	40	84	284	73	87	
47	36	73	313	75	90	
48	33	62	343	76	93	
49	29	51	372	78	96	
50	8.509 3625	8.511 5840	1.16401	2.3279	5.9098	
51	21	29	430	81	5.9101	
52	18	18	459	82	04	
53	14	8.511 5806	488	84	07	
54	10	8.511 5795	517	85	10	
55	07	84	546	87	13	
56	8.509 3603	73	575	88	16	
57	8.509 3599	62	604	90	19	
58	96	51	633	91	22	
59	92	40	663	93	25	
60	8.509 3588	8.511 5729	1.16692	2.3294	5.9127	7.866

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 30°.

Lat.	log A diff. 1° = -0.06	log B diff. 1° = -0.19	log C diff. 1° = +0.48	log D diff. 1° = +0.02	log E diff. 1° = +0.05	log F diff. 10° = +0.7
30 00	8.509 3588	8.511 5729	1.16692	2.3294	5.9127	7.866
1	84	18	721	96	30	
2	81	8.511 5706	750	97	33	
3	77	8.511 5696	778	2.3298	36	
4	73	84	807	2.3300	39	
05	69	73	836	01	42	
6	66	62	865	08	45	
7	62	51	894	04	48	
8	58	40	923	06	51	
9	55	28	952	07	54	
10	8.509 3551	8.511 5617	1.16981	2.3309	5.9157	
11	47	8.511 5606	1.17010	10	59	
12	43	8.511 5596	039	12	62	
13	40	84	068	13	65	
14	36	73	097	14	68	
15	32	61	126	16	71	
16	29	50	155	17	74	
17	25	39	184	18	77	
18	21	28	212	20	80	
19	17	17	241	22	83	
20	8.509 3514	8.511 5506	1.17270	2.3323	5.9186	7.867
21	10	8.511 5494	299	24	89	
22	06	83	328	26	92	
23	8.509 3502	72	357	27	95	
24	8.509 3499	61	385	29	5.9198	
25	95	49	414	30	5.9200	
26	91	38	443	32	03	
27	88	27	472	33	06	
28	84	16	500	34	09	
29	80	8.511 5404	529	36	12	
30	8.509 3476	8.511 5393	1.17568	2.3337	5.9215	
31	72	82	587	39	18	
32	69	71	615	40	21	
33	65	59	644	41	24	
34	61	48	673	43	27	
35	57	37	701	44	30	
36	54	26	730	46	33	
37	50	14	759	47	36	
38	46	8.511 5303	788	48	39	
39	42	8.511 5292	816	50	42	
40	8.509 3439	8.511 5281	1.17845	2.3351	5.9245	7.869
41	35	69	874	53	48	
42	31	58	902	54	51	
43	27	47	931	55	53	
44	24	35	959	57	56	
45	20	24	1.17988	58	59	
46	16	13	1.18017	59	62	
47	12	8.511 5202	045	61	65	
48	09	8.511 5190	074	62	68	
49	05	79	102	64	71	
50	8.509 3401	8.511 5168	1.18131	2.3365	5.9274	
51	8.509 3397	56	160	66	77	
52	94	45	188	68	80	
53	90	34	217	69	83	
54	86	22	245	70	86	
55	82	11	274	72	89	
56	78	8.511 5100	302	73	92	
57	75	8.511 5088	331	74	95	
58	71	77	359	76	5.9298	
59	67	66	388	77	5.9301	
60	8.509 3363	8.511 5054	1.18416	2.3379	5.9304	7.870



TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 31°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.19	log C diff. 1" = +0.47	log D diff. 1" = +0.02	log E diff. 1" = +0.05	log F diff. 10" = +0.5
31 00	8.509 3363	8.511 5354	1.18416	2.3379	5.9394	7.870
1	60	43	445	80	07	
2	56	32	473	81	10	
3	52	20	501	83	13	
4	48	8.511 5009	530	84	16	
5						
6	44	8.511 4998	558	85	19	
7	41	86	587	87	22	
8	37	75	615	88	25	
9	33	64	643	89	28	
10	29	52	672	91	31	
11						
12	8.509 3325	8.511 4941	1.18700	2.3392	5.9334	
13	22	29	729	93	37	
14	18	18	757	95	39	
15	14	8.511 4907	785	96	42	
16	10	8.511 4895	813	97	45	
17						
18	06	84	842	2.3399	48	
19	8.509 3303	72	870	2.3400	51	
20	8.509 3299	61	898	01	54	
21	95	50	927	03	57	
22	91	38	955	04	60	
23						
24	8.509 3287	8.511 4827	1.18983	2.3405	5.9363	7.871
25	84	15	1.19012	06	66	
26	80	8.511 4804	040	08	69	
27	76	8.511 4793	068	09	72	
28	72	81	096	10	75	
29						
30	68	70	125	12	78	
31	65	58	153	13	81	
32	61	47	181	14	84	
33	57	35	209	16	87	
34	53	24	238	17	90	
35						
36	8.509 3249	8.511 4713	1.19266	2.3418	5.9393	
37	46	8.511 4701	294	20	96	
38	42	8.511 4690	322	21	5.9399	
39	38	78	351	22	5.9402	
40	34	67	379	23	05	
41						
42	30	55	407	25	08	
43	26	44	435	26	11	
44	23	32	463	27	14	
45	19	21	491	29	17	
46	15	8.511 4609	520	30	20	
47						
48	8.509 3211	8.511 4598	1.19548	2.3431	5.9423	7.872
49	07	86	576	32	26	
50	03	75	604	34	29	
51	8.509 3200	63	632	35	32	
52	8.509 3196	52	660	36	35	
53						
54	92	40	688	37	38	
55	88	29	716	39	41	
56	84	17	744	40	44	
57	81	8.511 4506	772	41	47	
58	77	8.511 4494	800	43	50	
59						
60	8.509 3173	8.511 4483	1.19828	2.3444	5.9453	
61	69	71	856	45	56	
62	65	60	884	46	59	
63	61	48	912	48	62	
64	57	37	940	49	65	
65						
66	54	25	968	50	68	
67	50	14	1.19996	51	72	
68	46	8.511 4402	1.20024	53	75	
69	42	8.511 4391	052	54	78	
70	38	79	080	55	81	
71						
72	8.509 3134	8.511 4368	1.20108	2.3456	5.9484	7.873

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 32°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.19	log C diff. 1" = +0.46	log D diff. 1" = +0.02	log E diff. 1" = +0.05	log F diff. 10" = +0.3
32° 00'	8.509 3134	8.511 4368	1.20108	2.3456	5.9484	7.878
1	31	56	186	57	87	
2	27	44	164	59	90	
3	23	33	192	60	93	
4	19	21	220	61	96	
05	15	8.511 4310	248	62	5.9499	
6	11	8.511 4298	276	64	5.9502	
7	07	87	304	65	06	
8	04	75	332	66	08	
9	8.509 3100	63	360	67	11	
10	8.509 3096	8.511 4252	1.20387	2.3469	5.9514	
11	92	40	415	70	17	
12	88	29	443	71	20	
13	84	17	471	72	23	
14	80	8.511 4205	499	73	26	
15	76	8.511 4194	527	75	29	
16	73	82	555	76	32	
17	69	71	582	77	35	
18	65	59	610	78	38	
19	61	47	638	79	41	
20	8.509 3067	8.511 4136	1.20666	2.3481	5.9544	7.874
21	53	24	694	82	47	
22	49	13	722	83	50	
23	46	8.511 4101	749	84	53	
24	42	8.511 4089	777	85	56	
25	38	78	805	87	60	
26	34	66	833	88	63	
27	30	54	860	89	66	
28	26	43	888	90	69	
29	22	31	916	91	72	
30	8.509 3018	8.511 4020	1.20944	2.3493	5.9575	
31	15	8.511 4008	971	94	78	
32	11	8.511 3996	1.20999	95	81	
33	07	85	1.21027	96	84	
34	8.509 3003	73	054	97	87	
35	8.509 2999	61	082	2.3499	90	
36	95	50	110	2.3500	93	
37	91	38	137	01	96	
38	87	26	165	02	5.9599	
39	83	15	193	03	5.9602	
40	8.509 2980	8.511 3908	1.21220	2.3504	5.9605	7.875
41	76	8.511 3891	248	06	08	
42	72	79	276	07	11	
43	68	68	303	08	15	
44	64	56	331	09	18	
45	60	44	358	10	21	
46	56	33	386	11	24	
47	52	21	414	13	27	
48	48	8.511 3809	441	14	30	
49	44	8.511 3798	469	15	33	
50	8.509 2940	8.511 3786	1.21496	2.3516	5.9636	
51	37	74	524	17	39	
52	33	63	551	18	42	
53	29	51	579	19	45	
54	25	39	607	21	48	
55	21	27	634	22	51	
56	17	16	662	23	54	
57	13	8.511 3704	689	24	58	
58	09	8.511 3692	717	25	61	
59	05	80	744	26	64	
60	8.509 2901	8.511 3669	1.21772	2.3527	5.9667	7.875

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 33°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.20	log C diff. 1" = +0.45	log D diff. 1" = +0.02	log E diff. 1" = +0.05	log F diff. 10" = +0.2
33 00	8.509 2901	8.511 3669	1.21772	2.3527	5.9667	7.875
1	8.509 2897	57	799	29	70	
2	94	45	827	30	73	
3	90	33	854	31	76	
4	86	22	882	32	79	
05	82	8.511 3610	909	33	82	
6	78	8.511 3598	937	34	85	
7	74	86	964	35	88	
8	70	75	1.21992	36	92	
9	66	63	1.22019	38	95	
10	8.509 2862	8.511 3551	1.22047	2.3539	5.9638	
11	58	39	074	40	5.9701	
12	54	28	101	41	04	
13	51	16	129	42	07	
14	47	8.511 3504	156	43	10	
15	43	8.511 3492	184	44	13	
16	39	80	211	45	16	
17	35	69	238	46	19	
18	31	57	266	48	22	
19	27	45	293	49	25	
20	8.509 2823	8.511 3433	1.22321	2.3550	5.9729	7.876
21	19	21	348	51	32	
22	15	8.511 3410	375	52	35	
23	11	8.511 3398	403	53	38	
24	07	86	430	54	41	
25	8.509 2803	74	457	55	44	
26	8.509 2799	62	485	56	47	
27	95	51	512	57	50	
28	91	39	539	58	53	
29	88	27	567	60	57	
30	8.509 2784	8.511 3315	1.22504	2.3561	5.9760	
31	80	8.511 3303	621	62	63	
32	76	8.511 3291	648	63	66	
33	72	80	676	64	69	
34	68	68	703	65	72	
35	64	56	730	66	75	
36	60	44	757	67	78	
37	56	32	785	68	81	
38	52	20	812	69	85	
39	48	8.511 3209	839	70	88	
40	8.509 2744	8.511 3197	1.22866	2.3571	5.9791	7.876
41	40	85	893	72	94	
42	36	73	921	73	5.9797	
43	32	61	948	75	5.9800	
44	28	49	1.22975	76	03	
45	24	37	1.23002	77	06	
46	20	25	029	78	10	
47	16	13	057	79	13	
48	12	8.511 3102	084	80	16	
49	08	8.511 3090	111	81	19	
50	8.509 2704	8.511 3078	1.23138	2.3582	5.9822	
51	8.509 2701	66	165	83	25	
52	8.509 2697	54	192	84	28	
53	93	42	220	85	31	
54	89	30	247	86	35	
55	85	18	274	87	38	
56	81	8.511 3006	301	88	41	
57	77	8.511 2995	328	89	44	
58	73	83	355	90	47	
59	69	71	382	91	50	
60	8.509 2665	8.511 2959	1.23409	2.3592	5.9853	7.877

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 34°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.20	log C diff. 1" = +0.45	log D diff. 1" = +0.02	log E diff. 1" = +0.05	log F diff. 10" = +0.0
34 00	8.509 2665	8.511 2860	1.23409	2.3592	5.9858	7.877
1	61	47	437	98	57	
2	57	36	464	94	60	
3	53	23	491	96	63	
4	49	8.511 2911	518	96	66	
05	45	8.511 2899	545	97	69	
6	41	87	572	98	72	
7	37	75	599	2.3599	75	
8	33	63	626	2.3600	79	
9	29	51	653	01	82	
10	8.509 2625	8.511 2840	1.23680	2.3602	5.9885	
11	21	28	707	03	88	
12	17	16	734	04	91	
13	13	8.511 2804	761	05	94	
14	09	8.511 2792	788	06	5.9897	
15	05	80	815	07	5.9901	
16	8.509 2601	68	842	08	04	
17	8.509 2597	56	869	09	07	
18	93	44	896	10	10	
19	89	32	923	11	13	
20	8.509 2585	8.511 2720	1.23950	2.3612	5.9916	7.877
21	81	8.511 2708	1.23977	13	19	
22	77	8.511 2696	1.24004	14	23	
23	73	84	081	15	26	
24	69	72	068	16	29	
25	65	60	085	17	32	
26	61	48	112	18	35	
27	57	36	139	19	38	
28	53	24	165	20	42	
29	49	12	192	21	45	
30	8.509 2545	8.511 2600	1.2 219	2.3 22	5.9948	
31	41	8.511 2588	246	23	51	
32	37	76	273	24	54	
33	33	64	300	25	57	
34	29	52	327	26	61	
35	25	40	354	27	64	
36	21	28	381	28	67	
37	17	16	408	29	70	
38	13	8.511 2504	434	30	73	
39	09	8.511 2492	461	31	76	
40	8.509 2505	8.511 2480	1.24488	2.3632	5.9980	7.877
41	8.509 2501	68	515	33	83	
42	8.509 2497	56	542	34	86	
43	93	44	569	35	89	
44	89	32	596	36	92	
45	85	20	622	37	96	
46	81	8.511 2408	649	38	5.9999	
47	77	8.511 2396	676	39	6.0002	
48	73	84	703	40	05	
49	69	72	729	41	08	
50	8.509 2465	8.511 2360	1.24756	2.3642	6.0011	
51	61	48	788	43	15	
52	57	36	810	43	18	
53	53	23	837	44	21	
54	49	8.511 2311	863	45	24	
55	45	8.511 2299	890	46	27	
56	41	87	917	47	31	
57	37	75	944	48	34	
58	33	63	970	49	37	
59	29	51	1.24997	50	40	
60	8.509 2425	8.511 2239	1.25024	2.3651	6.0043	7.877

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 35°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.20	log C diff. 1" = +0.44	log D diff. 1" = +0.01	log E diff. 1" = +0.05	log F diff. 1" = +0.0
35 00	8.509 2425	8.511 2239	1.25024	2.3651	6.0043	7.877
1	21	27	050	52	47	
2	17	15	077	53	50	
3	13	8.511 2203	104	54	53	
4	09	8.511 2191	131	55	56	
05	05	78	157	56	59	
6	8.509 2401	66	184	56	63	
7	8.509 2396	54	211	57	66	
8	92	42	237	58	69	
9	88	30	264	59	72	
10	8.509 2384	8.511 2118	1.25291	2.3660	6.0075	
11	80	8.511 2106	317	61	79	
12	76	8.511 2094	344	62	82	
13	72	82	371	63	85	
14	68	70	397	64	88	
15	64	57	424	65	91	
16	60	45	451	66	95	
17	56	33	477	66	6.0088	
18	52	21	504	67	6.0101	
19	48	8.511 2009	531	68	04	
20	8.509 2344	8.511 1997	1.25557	2.3669	6.0107	7.877
21	40	85	584	70	11	
22	36	72	610	71	14	
23	32	60	637	72	17	
24	28	48	664	73	20	
25	24	36	690	74	23	
26	20	24	717	75	27	
27	16	12	743	75	30	
28	12	8.511 1900	770	76	33	
29	08	8.511 1887	796	77	36	
30	8.509 2304	8.511 1875	1.25823	2.3678	6.0140	
31	8.509 2300	63	850	79	43	
32	8.509 2296	51	876	80	46	
33	92	39	903	81	49	
34	87	27	929	82	52	
35	83	15	956	82	56	
36	79	8.511 1802	1.25982	83	59	
37	75	8.511 1790	1.26009	84	62	
38	71	78	035	85	65	
39	67	66	062	86	69	
40	8.509 2263	8.511 1754	1.26088	2.3687	6.0172	7.877
41	59	41	115	88	75	
42	55	29	141	88	78	
43	51	17	168	89	81	
44	47	8.511 1705	194	90	85	
45	43	8.511 1693	221	91	88	
46	39	80	247	92	91	
47	35	68	274	93	94	
48	31	56	300	94	6.0198	
49	27	44	327	94	6.0201	
50	8.509 2222	8.511 1632	1.26353	2.3695	6.0204	
51	18	20	380	96	07	
52	14	8.511 1607	406	97	11	
53	10	8.511 1595	432	98	14	
54	06	83	459	99	17	
55	8.509 2202	71	485	2.3699	20	
56	8.509 2198	58	512	2.3700	24	
57	94	46	538	01	27	
58	90	34	565	02	30	
59	86	22	591	03	33	
60	8.509 2182	8.511 1510	1.26617	2.3704	6.0237	7.877

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 36°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.20	log C diff. 1" = +0.41	log D diff. 1" = +0.01	log E diff. 1" = +0.05	log F diff. 10" = -0.2
°						
36 00	8.509 2182	8.511 1510	1.26617	2.3704	6.0237	7.877
1	78	8.511 1497	644	04	40	
2	74	85	670	06	43	
3	70	73	697	06	46	
4	65	61	723	07	50	
05	61	48	749	08	53	
6	57	36	776	09	56	
7	53	24	802	09	59	
8	49	8.511 1412	828	10	63	
9	45	8.511 1399	855	11	66	
10	8.509 2141	8.511 1387	1.26881	2.3712	6.0289	
11	37	75	908	13	72	
12	33	63	934	13	76	
13	29	60	960	14	79	
14	25	58	1.26987	15	82	
15	21	26	1.27013	16	85	
16	16	14	039	17	89	
17	12	8.511 1301	066	17	92	
18	08	8.511 1289	092	18	95	
19	04	77	118	19	6.0299	
20	8.509 2100	8.511 1265	1.27145	2.3720	6.0302	7.877
21	8.509 2086	52	171	21	05	
22	92	40	197	21	08	
23	88	28	223	22	12	
24	84	15	250	23	15	
25	80	8.511 1203	276	24	18	
26	75	8.511 1191	302	25	21	
27	71	79	329	25	25	
28	67	66	355	26	28	
29	63	54	381	27	31	
30	8.509 2059	8.511 1142	1.27407	2.3728	6.0334	
31	55	29	434	29	38	
32	51	17	460	29	41	
33	47	8.511 1105	486	30	44	
34	43	8.511 1092	512	31	48	
35	39	80	539	32	51	
36	35	68	565	32	54	
37	30	56	591	33	57	
38	26	43	617	34	61	
39	22	31	644	35	64	
40	8.509 2018	8.511 1019	1.27670	2.3735	6.0367	7.877
41	14	8.511 1006	696	36	71	
42	10	8.511 0994	722	37	74	
43	06	82	748	38	77	
44	8.509 2002	69	775	39	80	
45	8.509 1988	57	801	39	84	
46	93	45	827	40	87	
47	89	32	853	41	90	
48	85	20	879	42	94	
49	81	8.511 0908	905	42	6.0397	
50	8.509 1977	8.511 0895	1.27932	2.3743	6.0400	
51	73	83	958	44	03	
52	69	71	1.27984	45	07	
53	65	58	1.28010	45	10	
54	61	46	036	46	13	
55	56	34	062	47	17	
56	52	21	088	48	20	
57	48	8.511 0809	114	48	23	
58	44	8.511 0797	141	49	27	
59	40	84	167	50	30	
60	8.509 1936	8.511 0772	1.28193	2.3750	6.0433	7.876

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 37°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.43	log D diff. 1" = +0.01	log E diff. 1" = +0.06	log F diff. 1" = -0.3
37 00	8.509 1936	8.511 0772	1.28193	2.3750	6.0433	7.876
1	32	60	219	51	37	
2	28	47	245	52	40	
3	23	35	271	53	43	
4	19	22	297	53	46	
05	15	8.511 0710	324	54	50	
6	11	8.511 0698	350	55	53	
7	07	85	376	56	56	
8	85.09 1903	73	402	56	60	
9	85.09 1899	61	428	57	63	
10	8.509 1895	8.511 0648	1.28454	2.3758	6.0466	
11	90	36	480	59	70	
12	86	23	506	59	73	
13	82	8.511 0611	532	60	76	
14	78	8.511 0599	558	61	80	
15	74	86	584	61	83	
16	70	74	610	62	86	
17	66	61	636	63	89	
18	62	49	662	73	93	
19	57	37	688	64	96	
20	8.509 1853	8.511 0524	1.28715	2.3765	6.0499	7.876
21	49	12	741	66	6.0503	
22	45	8.511 0500	767	66	06	
23	41	8.511 0487	793	67	09	
24	37	75	819	68	13	
25	33	62	845	68	16	
26	28	50	871	69	19	
27	24	37	897	70	23	
28	20	25	923	70	26	
29	16	13	949	71	29	
30	8.509 1812	8.511 0400	1.28975	2.3772	6.0533	
31	08	8.511 0388	1.29001	72	36	
32	04	75	027	73	39	
33	8.509 1800	63	053	74	43	
34	8.509 1795	51	079	74	46	
35	91	38	104	75	49	
36	87	26	130	76	53	
37	83	13	156	76	56	
38	79	8.511 0301	182	77	59	
39	75	8.511 0288	208	78	62	
40	8.509 1771	8.511 0276	1.29234	2.3779	6.0566	7.875
41	66	64	260	79	69	
42	62	51	286	80	73	
43	58	39	312	81	76	
44	54	26	338	81	79	
45	50	14	364	82	83	
46	46	8.511 0201	390	82	86	
47	41	8.511 0189	416	83	89	
48	37	76	442	84	93	
49	33	64	468	84	6.0596	
50	8.509 1729	8.511 0151	1.29494	2.3785	6.0600	
51	25	39	520	86	03	
52	21	26	546	86	06	
53	16	14	571	87	10	
54	12	8.511 0102	597	88	13	
55	08	8.511 0089	623	88	16	
56	04	77	649	89	20	
57	8.509 1700	64	675	90	23	
58	8.509 1696	52	701	90	26	
59	92	39	727	91	30	
60	8.509 1687	8.511 0027	1.29753	2.3792	6.0633	7.874

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 38°.

Lat.	log A diff. 1° = -0.07	log B diff. 1° = -0.21	log C diff. 1° = +0.43	log D diff. 1° = +0.01	log E diff. 1° = +0.06	log F diff. 10° = -0.4
38 00	8.509 1687	8.511 0027	1.29753	2.3792	6.0633	7.874
1	83	14	778	92	36	
2	79	8.511 0002	804	93	40	
3	75	8.510 9969	830	93	43	
4	71	77	856	94	47	
05	67	64	882	95	50	
6	62	52	908	95	53	
7	58	39	934	96	57	
8	54	27	959	97	60	
9	50	14	1.29985	97	63	
10	8.509 1646	8.510 9902	1.30011	2.3796	6.0667	
11	42	8.510 9899	087	2.3799	70	
12	37	77	063	2.3800	73	
13	33	64	089	00	77	
14	29	52	114	01	80	
15	25	39	140	01	84	
16	21	27	166	02	87	
17	17	14	192	02	90	
18	12	8.510 9802	218	03	94	
19	08	8.510 9789	243	03	6.0697	
20	8.509 1604	8.510 9777	1.30269	2.3804	6.0701	7.874
21	8.509 1600	64	295	05	04	
22	8.509 1596	52	321	05	07	
23	92	39	347	06	11	
24	87	27	372	06	14	
25	83	14	398	07	17	
26	79	8.510 9701	424	08	21	
27	75	8.510 9689	450	08	24	
28	71	77	476	09	28	
29	66	64	501	09	31	
30	8.509 1562	8.510 9652	1.30527	2.3810	6.0734	
31	58	39	553	11	38	
32	54	27	579	11	41	
33	50	14	604	12	44	
34	46	8.510 9601	630	12	48	
35	41	8.510 9599	656	13	51	
36	37	76	682	14	55	
37	33	64	707	14	58	
38	29	51	733	15	61	
39	25	39	759	15	65	
40	8.509 1521	8.510 9526	1.30785	2.3816	6.0768	7.873
41	16	14	810	16	72	
42	12	8.510 9501	836	17	75	
43	08	8.510 9488	862	18	78	
44	04	76	887	18	82	
45	8.509 1500	63	913	19	85	
46	8.509 1495	51	939	19	89	
47	91	38	965	20	92	
48	87	26	1.30990	20	95	
49	83	13	1.31016	21	6.0799	
50	8.509 1479	8.510 9401	1.31042	2.3822	6.0802	
51	75	8.510 9388	067	22	06	
52	70	76	093	23	09	
53	66	63	119	23	13	
54	62	50	144	24	16	
55	58	38	170	24	19	
56	54	25	196	25	23	
57	49	13	221	25	26	
58	45	8.510 9300	247	26	30	
59	41	8.510 9287	273	27	33	
60	8.509 1457	8.510 9275	1.31299	2.3827	6.0836	7.872



TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 39°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.43	log D diff. 1" = +0.01	log E diff. 1" = +0.06	log F diff. 10" = -0.5
39 00	8.509 1437	8.510 9275	1.31299	2.3827	6.0836	7.872
1	33	62	324	28	40	
2	28	50	350	28	43	
3	24	57	375	29	47	
4	20	25	401	29	50	
05	16	8.510 9212	427	30	53	
6	12	8.510 9199	452	30	57	
7	07	87	478	31	60	
8	8.509 1403	74	504	31	64	
9	8.509 1399	62	529	32	67	
10	8.509 1395	8.510 9149	1.31555	2.3832	6.0871	
11	91	36	581	33	74	
12	86	24	606	33	77	
13	82	8.510 9111	632	34	81	
14	78	8.510 9098	658	35	84	
15	74	86	683	35	88	
16	70	73	709	36	91	
17	65	61	734	36	95	
18	61	48	760	37	6.0898	
19	57	36	786	37	6.0902	
20	8.509 1353	8.510 9023	1.31811	2.3838	6.0905	7.871
21	49	8.510 9010	837	38	98	
22	44	8.510 8998	862	39	12	
23	40	85	888	39	15	
24	36	73	913	40	19	
25	32	60	939	40	22	
26	28	47	965	41	26	
27	23	35	1.31990	41	29	
28	19	22	1.32016	42	32	
29	15	8.510 8909	041	42	36	
30	8.509 1311	8.510 8897	1.32067	2.3843	6.0909	
31	07	84	092	43	43	
32	8.509 1302	72	118	44	46	
33	8.509 1298	59	144	44	50	
34	94	46	169	45	53	
35	90	34	195	45	57	
36	86	21	220	46	60	
37	81	8.510 8808	246	46	63	
38	77	8.510 8796	271	47	67	
39	73	83	297	47	70	
40	8.509 1269	8.510 8771	1.32223	2.3848	6.0974	7.870
41	64	58	345	48	77	
42	60	45	374	49	81	
43	56	33	399	49	84	
44	52	20	425	50	88	
45	48	8.510 8707	450	50	91	
46	43	8.510 8695	476	51	95	
47	39	82	501	51	6.0998	
48	35	69	527	52	6.1002	
49	31	57	552	52	05	
50	8.509 1227	8.510 8644	1.32578	2.3852	6.1008	
51	22	31	603	53	12	
52	18	19	629	53	15	
53	14	8.510 8606	654	54	19	
54	10	8.510 8593	680	54	22	
55	06	81	705	55	26	
56	8.509 1201	68	731	55	29	
57	8.509 1197	55	756	56	33	
58	93	43	782	56	36	
59	89	30	807	57	40	
60	8.509 1184	8.510 8517	1.32833	2.3857	6.1043	7.869

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 40°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = +0.01	log E diff. 1" = +0.06	log F diff. 10" = -0.7
00	8.509 1184	8.510 8517	1.32833	2.3857	6.1043	7.869
01	80	8.510 8506	858	58	47	
02	76	8.510 8492	884	58	50	
03	72	79	909	58	54	
04	67	67	935	59	57	
05	63	54	960	59	61	
06	59	41	1.32986	60	64	
07	56	29	1.33011	60	67	
08	50	16	037	60	71	
09	46	8.510 8403	062	61	74	
10	8.509 1142	8.510 8391	1.33088	2.3861	6.1078	
11	38	78	113	62	81	
12	34	66	139	62	85	
13	29	53	164	63	88	
14	25	40	189	63	92	
15	21	27	215	64	96	
16	17	15	240	64	6.1099	
17	12	8.510 8302	266	65	6.1102	
18	08	8.510 8289	291	65	06	
19	04	77	317	65	09	
20	8.509 1100	8.510 8264	1.33342	2.3866	6.1113	7.867
21	8.509 1096	51	368	66	16	
22	91	38	393	67	20	
23	87	26	418	67	23	
24	83	13	444	68	27	
25	79	8.510 8200	469	68	30	
26	74	8.510 8188	495	68	34	
27	70	75	520	69	37	
28	66	62	546	69	41	
29	62	50	571	70	44	
30	8.509 1067	8.510 8137	1.33596	2.3870	6.1148	
31	53	24	622	70	51	
32	49	8.510 8111	647	71	55	
33	45	8.510 8099	673	71	58	
34	41	86	698	72	62	
35	36	73	723	72	65	
36	32	61	749	72	69	
37	28	48	774	73	72	
38	24	35	800	73	76	
39	19	23	825	74	79	
40	8.509 1015	8.510 8010	1.33850	2.3874	6.1183	7.866
41	11	8.510 7997	876	74	86	
42	07	84	901	75	90	
43	8.509 1002	72	926	75	98	
44	8.509 0998	59	952	76	6.1197	
45	94	46	1.33977	76	6.1200	
46	90	33	1.34003	76	04	
47	86	21	028	77	07	
48	81	8.510 7908	053	77	11	
49	77	8.510 7896	079	77	15	
50	8.509 0973	8.510 7883	1.34104	2.3878	6.1218	
51	68	70	129	78	22	
52	64	57	155	79	25	
53	60	44	180	79	29	
54	56	32	206	79	32	
55	52	19	231	80	36	
56	47	8.510 7806	256	80	39	
57	43	8.510 7793	282	80	43	
58	39	81	307	81	46	
59	34	68	332	81	50	
60	8.509 0930	8.510 7765	1.34358	2.3882	6.1253	7.864

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 41°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = +0.01	log E diff. 1" = +0.06	log F diff. 10" = -0.8
41 00	8.509 0680	8.510 7755	1.34356	2.3882	6.1258	7.861
1	26	42	333	82	57	
2	22	30	408	82	60	
3	18	17	434	83	64	
4	13	8.510 7704	459	83	67	
05	09	8.510 7691	484	83	71	
6	05	79	510	84	75	
7	8.509 0680	66	535	84	78	
8	8.509 0686	53	560	84	82	
9	92	40	586	85	85	
10	8.509 0688	8.510 7628	1.34611	2.3885	6.1289	
11	83	15	636	85	92	
12	79	8.510 7602	662	85	96	
13	75	8.510 7560	687	86	6.1299	
14	71		712	87	6.1308	
15	67	64	738	87	06	
16	62	51	763	87	10	
17	58	39	788	88	14	
18	54	26	814	88	17	
19	49	13	839	88	21	
20	8.509 0645	8.510 7500	1.34864	2.3889	6.1324	7.863
21	41	8.510 7488	860	89	28	
22	37	75	915	89	31	
23	32	62	940	90	35	
24	28	49	965	90	38	
25	24	36	1.34991	90	42	
26	20	24	1.35016	91	46	
27	15	8.510 7411	041	91	49	
28	11	8.510 7398	066	91	53	
29	07	85	092	91	56	
30	8.509 0603	8.510 7373	1.35117	2.3892	6.1360	
31	8.509 0798	60	142	92	63	
32	94	47	168	92	67	
33	90	34	193	93	70	
34	86	22	218	93	74	
35	81	8.510 7309	243	93	78	
36	77	8.510 7296	269	94	81	
37	73	83	294	94	85	
38	69	70	319	94	88	
39	64	58	345	95	92	
40	8.509 0760	8.510 7245	1.35370	2.3895	6.1395	7.861
41	56	32	395	95	6.1399	
42	52	19	420	96	6.1408	
43	47	8.510 7207	446	96	06	
44	43	8.510 7194	471	96	10	
45	39	81	496	97	13	
46	35	68	522	97	17	
47	30	55	547	97	20	
48	26	43	572	97	24	
49	22	30	597	98	28	
50	8.509 0718	8.510 7117	1.35623	2.3898	6.1431	
51	13	8.510 7104	648	98	35	
52	09	8.510 7091	673	98	38	
53	05	79	698	99	42	
54	8.509 0700	66	723	99	46	
55	8.509 0696	53	749	2.3899	49	
56	92	40	774	2.3900	53	
57	88	27	799	00	56	
58	83	15	824	00	60	
59	79	8.510 7002	850	00	63	
60	8.509 0675	8.510 6989	1.35875	2.3901	6.1467	7.860

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 42°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = +0.00	log E diff. 1" = +0.06	log F diff. 10" = -0.9
42 00	8.509 0675	8.510 6989	1.35875	2.3901	6.1467	7.860
1	71	76	900	01	71	
2	66	64	925	01	74	
3	62	51	951	01	78	
4	58	38	1.35976	02	81	
05	54	25	1.36001	02	85	
6	49	12	026	02	89	
7	45	8.510 6900	052	08	92	
8	41	8.510 6887	077	08	96	
9	36	74	102	08	6.1499	
10	8.509 0682	8.510 6861	1.36127	2.3903	6.1508	
11	28	48	152	04	07	
12	24	36	178	04	10	
13	19	23	203	04	14	
14	15	8.510 6810	228	04	17	
15	11	8.510 6797	253	05	21	
16	07	84	278	05	25	
17	8.509 0802	72	304	05	28	
18	8.509 0808	69	329	05	32	
19	94	46	354	06	35	
20	8.509 0800	8.510 6783	1.36379	2.3906	6.1539	7.868
21	85	20	404	06	43	
22	81	8.510 6707	430	06	46	
23	77	8.510 6695	455	07	50	
24	72	82	480	07	54	
25	68	69	505	07	57	
26	64	56	530	07	61	
27	60	43	556	07	64	
28	55	31	581	08	68	
29	51	18	606	08	72	
30	8.509 0847	8.510 6605	1.36631	2.3908	6.1575	
31	43	8.510 6592	656	08	79	
32	38	79	682	09	83	
33	34	66	707	09	86	
34	30	54	732	09	90	
35	25	41	757	09	93	
36	21	28	782	10	6.1597	
37	17	15	808	10	6.1601	
38	13	8.510 6502	833	10	04	
39	08	8.510 6490	858	10	08	
40	8.509 0804	8.510 6477	1.36883	2.3910	6.1612	7.866
41	8.509 0800	64	908	11	15	
42	8.509 0496	51	934	11	19	
43	81	38	959	11	22	
44	87	25	1.36984	11	26	
45	83	13	1.87009	12	30	
46	78	8.510 6400	034	12	33	
47	74	8.510 6387	059	12	37	
48	70	74	085	12	41	
49	66	61	110	12	44	
50	8.509 0461	8.510 6348	1.37185	2.3913	6.1648	
51	57	36	160	13	52	
52	53	23	185	13	55	
53	48	8.510 6310	210	13	59	
54	44	8.510 6297	235	13	63	
55	40	84	261	14	66	
56	36	71	286	14	70	
57	31	59	311	14	73	
58	27	46	336	14	77	
59	23	33	361	14	81	
60	8.509 0419	8.510 6220	1.37386	2.3914	6.1684	7.864

TABLE II.—Geodesic position computations—Continued.

LATITUDE  $\phi'$ .

Lat.	log A dist. $P' = -4.5'$	log B dist. $P' = -0.1$	log C dist. $P' = +0.2$	log D dist. $P' = +0.5$	log E dist. $P' = +0.8$	log F dist. $P' = +1$
40	8.509 0000	8.510 0000	1.37286	2.3904	6.1884	7.864
1	14	8.509 0007	621	15	80	
2	29	8.509 0015	621	15	80	
3	44	8.509 0023	621	15	80	
4	59	8.509 0031	621	15	80	
5	74	8.509 0039	621	15	80	
6	89	8.509 0047	621	15	80	
7	104	8.509 0055	621	15	80	
8	119	8.509 0063	621	15	80	
9	134	8.509 0071	621	15	80	
10	149	8.509 0079	621	15	80	
11	164	8.509 0087	621	15	80	
12	179	8.509 0095	621	15	80	
13	194	8.509 0103	621	15	80	
14	209	8.509 0111	621	15	80	
15	224	8.509 0119	621	15	80	
16	239	8.509 0127	621	15	80	
17	254	8.509 0135	621	15	80	
18	269	8.509 0143	621	15	80	
19	284	8.509 0151	621	15	80	
20	299	8.509 0159	621	15	80	
21	314	8.509 0167	621	15	80	
22	329	8.509 0175	621	15	80	
23	344	8.509 0183	621	15	80	
24	359	8.509 0191	621	15	80	
25	374	8.509 0199	621	15	80	
26	389	8.509 0207	621	15	80	
27	404	8.509 0215	621	15	80	
28	419	8.509 0223	621	15	80	
29	434	8.509 0231	621	15	80	
30	449	8.509 0239	621	15	80	
31	464	8.509 0247	621	15	80	
32	479	8.509 0255	621	15	80	
33	494	8.509 0263	621	15	80	
34	509	8.509 0271	621	15	80	
35	524	8.509 0279	621	15	80	
36	539	8.509 0287	621	15	80	
37	554	8.509 0295	621	15	80	
38	569	8.509 0303	621	15	80	
39	584	8.509 0311	621	15	80	
40	599	8.509 0319	621	15	80	
41	614	8.509 0327	621	15	80	
42	629	8.509 0335	621	15	80	
43	644	8.509 0343	621	15	80	
44	659	8.509 0351	621	15	80	
45	674	8.509 0359	621	15	80	
46	689	8.509 0367	621	15	80	
47	704	8.509 0375	621	15	80	
48	719	8.509 0383	621	15	80	
49	734	8.509 0391	621	15	80	
50	749	8.509 0399	621	15	80	
51	764	8.509 0407	621	15	80	
52	779	8.509 0415	621	15	80	
53	794	8.509 0423	621	15	80	
54	809	8.509 0431	621	15	80	
55	824	8.509 0439	621	15	80	
56	839	8.509 0447	621	15	80	
57	854	8.509 0455	621	15	80	
58	869	8.509 0463	621	15	80	
59	884	8.509 0471	621	15	80	
60	899	8.509 0479	621	15	80	

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 44°.

Lat.	log A diff. 1" = -0.07	log B. diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = +0.00	log E diff. 1" = +0.06	log F diff. 10' = 1.2
44 00	8.509 0162	8.510 5449	1.38894	2.3923	6.1905	7.848
1	57	36	919	23	09	
2	53	23	945	23	13	
3	49	8.510 5411	970	23	17	
4	44	8.510 5398	1.38995	23	20	
05	40	85	1.39020	23	24	
6	36	72	045	24	28	
7	31	59	070	24	31	
8	27	46	095	24	35	
9	23	33	120	24	39	
10	8.509 0119	8.510 5320	1.39145	2.3924	6.1943	
11	14	8.510 5307	171	24	46	
12	10	8.510 5295	196	24	50	
13	06	82	221	24	54	
14	8.509 0102	69	246	24	58	
15	8.509 0097	56	271	24	61	
16	93	43	296	24	65	
17	89	30	321	24	69	
18	84	18	346	24	72	
19	80	8.510 5205	371	25	76	
20	8.509 0076	8.510 5192	1.39396	2.3925	6.1980	7.845
21	72	79	422	25	84	
22	67	66	447	25	87	
23	63	53	472	25	91	
24	59	40	497	25	96	
25	54	28	522	25	6.1999	
26	50	15	547	25	6.2002	
27	46	8.510 5102	572	25	06	
28	42	8.510 5089	597	25	10	
29	37	76	623	25	14	
30	8.509 0033	8.510 5063	1.39648	2.3925	6.2017	
31	29	50	673	25	21	
32	24	37	698	25	25	
33	20	25	723	25	29	
34	16	8.510 5012	748	25	32	
35	11	8.510 4999	773	25	36	
36	07	86	798	26	40	
37	8.509 0003	73	823	26	44	
38	8.508 9999	60	848	26	47	
39	94	47	873	26	51	
40	8.508 9990	8.510 4935	1.39898	2.3926	6.2055	7.843
41	86	22	924	26	59	
42	81	8.510 4909	949	26	62	
43	77	8.510 4896	974	26	66	
44	73	83	1.39999	26	70	
45	69	70	1.40024	26	74	
46	64	57	049	26	77	
47	60	44	074	26	81	
48	56	32	099	26	85	
49	51	19	124	26	89	
50	8.508 9947	8.510 4806	1.40149	2.3926	6.2092	
51	43	8.510 4793	174	26	6.2096	
52	39	80	200	26	6.2100	
53	34	67	225	26	04	
54	30	54	250	26	08	
55	26	41	275	26	11	
56	21	29	300	26	15	
57	17	16	325	26	19	
58	13	8.510 4703	350	26	23	
59	09	8.510 4690	375	26	27	
60	8.508 9904	8.510 4677	1.40400	2.3926	6.2130	7.840

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 49°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = +0.00	log E diff. 1" = +0.06	log F diff. 10" = -1.1
45 00	8.508 9904	8.510 4677	1.40400	2.3926	6.2130	7.840
1	8.508 9900	64	425	26	34	
2	8.508 9896	51	450	26	38	
3	91	39	475	26	42	
4	87	26	501	26	46	
05	83	13	526	26	49	
6	78	8.510 4600	551	26	53	
7	74	8.510 4567	576	26	57	
8	70	74	601	26	61	
9	66	61	626	26	64	
10	8.508 9861	8.510 4548	1.40651	2.3926	6.2168	
11	57	36	676	26	72	
12	53	23	701	26	76	
13	48	8.510 4510	727	26	80	
14	44	8.510 4497	752	26	83	
15	40	84	777	26	87	
16	36	71	802	26	91	
17	31	59	827	26	95	
18	27	46	852	26	6.2199	
19	23	33	877	26	6.2202	
20	8.508 9818	8.510 4420	1.40902	2.3926	6.2206	7.838
21	14	8.510 4407	927	26	10	
22	10	8.510 4394	952	26	14	
23	06	81	1.40978	26	18	
24	8.508 9801	68	1.41003	26	21	
25	8.508 9797	56	028	26	25	
26	93	43	053	26	29	
27	88	30	078	26	33	
28	84	17	103	26	37	
29	80	8.510 4304	128	26	40	
30	8.508 9776	8.510 4291	1.41153	2.3926	6.2244	
31	71	78	178	26	48	
32	67	65	203	26	52	
33	63	52	229	26	56	
34	58	40	254	26	60	
35	54	27	279	26	63	
36	50	14	304	25	67	
37	46	8.510 4201	329	25	71	
38	41	8.510 4188	354	25	75	
39	37	75	379	25	79	
40	8.508 9733	8.510 4162	1.41404	2.3925	6.2283	7.835
41	28	49	429	25	86	
42	24	37	454	25	90	
43	20	24	479	25	94	
44	16	8.510 4111	505	25	6.2298	
45	11	8.510 4098	530	25	6.2302	
46	07	85	555	25	06	
47	8.508 9703	72	580	25	09	
48	8.508 9698	60	605	25	13	
49	94	47	630	25	17	
50	8.508 9689	8.510 4034	1.41655	2.3925	6.2321	
51	85	21	680	25	25	
52	81	8.510 4008	705	25	29	
53	77	8.510 3995	731	25	32	
54	72	82	756	24	36	
55	68	69	781	24	40	
56	64	57	806	24	44	
57	60	44	831	24	48	
58	55	31	856	24	52	
59	51	18	881	24	55	
60	8.508 9647	8.510 3905	1.41906	2.3924	6.2359	7.832

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 46°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.00	log E diff. 1" = +0.06	log F diff. 10" = -1.4
00	8.508 9647	8.510 3805	1.41906	2.3924	6.2259	7.832
1	43	8.510 3892	981	24	63	
2	38	79	967	24	67	
3	34	67	1.41962	24	71	
4	30	54	1.42007	24	75	
05	25	41	082	24	79	
6	21	28	067	23	82	
7	17	15	062	23	86	
8	13	8.510 3802	107	23	90	
9	08	8.510 3789	132	23	94	
10	8.508 9604	8.510 3776	1.42157	2.3923	6.2298	
11	8.508 9600	64	133	23	6.2402	
12	8.508 9595	51	206	23	06	
13	91	38	233	23	09	
14	87	25	258	23	13	
15	83	8.510 3712	283	23	17	
16	78	8.510 3699	306	23	21	
17	74	86	333	22	25	
18	70	74	358	22	29	
19	65	61	384	22	33	
20	8.508 9561	8.510 3648	1.42409	2.3922	6.2436	7.830
21	57	35	434	22	40	
22	53	22	459	22	44	
23	48	8.510 3609	484	22	48	
24	44	8.510 3596	509	22	52	
25	40	84	534	22	56	
26	35	71	559	21	60	
27	31	58	584	21	64	
28	27	45	610	21	67	
29	23	32	635	21	71	
30	8.508 9518	8.510 3519	1.42660	2.3921	6.2475	
31	14	8.510 3506	685	21	79	
32	10	8.510 3494	710	21	83	
33	05	81	735	21	87	
34	8.508 9501	68	760	20	91	
35	8.508 9497	55	786	20	95	
36	93	42	811	20	6.2499	
37	88	29	836	20	6.2502	
38	84	17	861	20	06	
39	80	8.510 3404	886	20	10	
40	8.508 9475	8.510 3391	1.42911	2.3920	6.2514	7.827
41	71	78	936	19	18	
42	67	65	961	19	22	
43	63	52	1.42967	19	26	
44	58	39	1.43012	19	30	
45	54	27	037	19	34	
46	50	14	062	19	38	
47	45	8.510 3301	087	19	41	
48	41	8.510 3288	112	18	45	
49	37	75	137	18	49	
50	8.508 9433	8.510 3262	1.43163	2.3918	6.2553	
51	28	49	188	18	57	
52	24	37	213	18	61	
53	20	24	238	18	65	
54	16	8.510 3211	263	18	69	
55	11	8.510 3198	288	17	73	
56	07	85	314	17	77	
57	8.508 9403	72	339	17	81	
58	8.508 9398	60	364	17	84	
59	94	47	389	17	88	
60	8.508 9390	8.510 3134	1.43414	2.3917	6.2592	7.824



TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 47°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.00	log E diff. 1" = +0.07	log F diff. 1" = -1.6
47 00	8.508 9390	8.510 3134	1.43414	2.3917	6.2592	7.824
1	86	21	439	16	6.2596	
2	81	8.510 3108	465	16	6.2600	
3	77	8.510 3095	490	16	04	
4	73	82	515	16	08	
05	68	70	540	16	12	
6	64	57	565	16	16	
7	60	44	590	15	20	
8	56	31	615	15	24	
9	51	18	641	15	28	
10	8.508 9347	8.510 3005	1.43666	2.3915	6.2632	
11	43	8.510 2993	691	15	35	
12	38	80	716	14	39	
13	34	67	741	14	43	
14	30	54	766	14	47	
15	26	41	792	14	51	
16	21	28	817	14	55	
17	17	16	842	13	59	
18	13	8.510 2903	867	13	63	
19	09	8.510 2890	892	13	67	
20	8.508 9304	8.510 2877	1.43917	2.3913	6.2671	7.821
21	8.508 9300	64	943	13	75	
22	8.508 9296	51	968	12	79	
23	91	39	1.43993	12	83	
24	87	26	1.44018	12	87	
25	83	13	043	12	91	
26	79	8.510 2800	069	12	95	
27	74	8.510 2787	094	11	6.2699	
28	70	74	119	11	6.2702	
29	66	62	144	11	06	
30	8.508 9261	8.510 2749	1.44169	2.3911	6.2710	
31	57	36	195	11	14	
32	53	23	220	10	18	
33	49	8.510 2710	245	10	22	
34	44	8.510 2698	270	10	26	
35	40	85	295	10	30	
36	36	72	321	10	34	
37	32	59	346	09	38	
38	27	46	371	09	42	
39	23	33	396	09	46	
40	8.508 9219	8.510 2621	1.44421	2.3909	6.2750	7.817
41	14	8.510 2608	447	08	54	
42	10	8.510 2595	472	08	58	
43	06	82	497	08	62	
44	8.508 9202	69	522	08	66	
45	8.508 9197	57	547	07	70	
46	93	44	573	07	74	
47	89	31	598	07	78	
48	84	18	623	07	82	
49	80	8.510 2505	648	07	86	
50	8.508 9176	8.510 2493	1.44673	2.3906	6.2790	
51	72	80	699	06	94	
52	67	67	724	06	6.2798	
53	63	54	749	06	6.2802	
54	59	41	774	05	06	
55	55	28	800	05	10	
56	50	16	825	05	14	
57	46	8.510 2403	850	05	18	
58	42	8.510 2390	875	04	22	
59	38	77	900	04	26	
60	8.508 9133	8.510 2364	1.44926	2.3904	6.2830	7.814

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 48°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.00	log E diff. 1" = +0.07	log F diff. 10' = -1.7
00	8.508 9133	8.510 2364	1.44926	2.3904	6.2830	7.814
1	29	52	951	04	34	
2	25	39	1.44976	03	38	
3	20	26	1.45001	03	42	
4	16	13	027	03	46	
05	12	8.510 2300	052	02	50	
6	08	8.510 2288	077	02	54	
7	8.508 9103	75	102	02	58	
8	8.508 9099	62	128	02	62	
9	96	49	153	01	66	
10	8.508 9091	8.510 2236	1.45178	2.3901	6.2870	
11	86	24	203	01	74	
12	82	8.510 2211	229	01	78	
13	78	8.510 2198	254	00	82	
14	74	85	279	00	86	
15	69	72	304	2.3900	90	
16	65	60	330	2.3909	94	
17	61	47	355	99	6.2888	
18	57	34	380	99	6.2902	
19	52	21	406	99	06	
20	8.508 9048	8.510 2108	1.45431	2.3898	6.2910	7.811
21	44	8.510 2096	456	98	14	
22	39	83	481	98	18	
23	35	70	507	97	22	
24	31	57	532	97	26	
25	27	45	557	97	30	
26	22	32	582	97	34	
27	18	19	608	96	38	
28	14	8.510 2006	633	96	42	
29	10	8.510 1993	658	96	46	
30	8.508 9005	8.510 1981	1.45683	2.3895	6.2950	
31	8.508 9001	68	709	95	54	
32	8.508 8997	55	734	95	58	
33	93	42	759	95	62	
34	88	30	785	94	66	
35	84	17	810	94	70	
36	80	8.510 1904	835	94	74	
37	76	8.510 1891	861	93	78	
38	71	78	886	93	82	
39	67	66	911	93	86	
40	8.508 8963	8.510 1853	1.45937	2.3892	6.2990	7.807
41	59	40	962	92	94	
42	54	27	1.45987	92	6.2998	
43	50	15	1.46012	91	6.3002	
44	46	8.510 1802	038	91	06	
45	41	8.510 1789	063	91	10	
46	37	76	088	90	15	
47	33	64	114	90	19	
48	29	51	139	90	23	
49	24	38	164	89	27	
50	8.508 8920	8.510 1725	1.46190	2.3889	6.3031	
51	16	13	215	89	35	
52	12	8.510 1700	240	88	39	
53	08	8.510 1687	266	88	43	
54	8.508 8903	74	291	88	47	
55	8.508 8909	62	316	87	51	
56	95	49	342	87	55	
57	90	36	367	87	59	
58	86	23	392	86	63	
59	82	8.510 1610	418	86	67	
60	8.508 8878	8.510 1598	1.46443	2.3886	6.3071	7.804

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 49°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 1" = -1.1
49 00	8.508 8878	8.510 1306	1.86441	2.3886	6.31671	7.804
1	73	85	468	85	75	
2	69	72	494	85	79	
3	65	59	519	85	84	
4	61	47	544	84	88	
05	57	34	570	84	92	
6	52	21	595	84	6.3206	
7	48	8.510 1308	621	82	6.3100	
8	44	8.510 1406	646	83	94	
9	39	82	671	83	98	
10	8.508 8835	8.510 1470	1.46696	2.3882	6.3112	
11	31	58	722	82	16	
12	27	45	747	81	20	
13	23	32	773	81	24	
14	18	19	798	81	28	
15	14	8.510 1467	824	80	32	
16	10	8.510 1394	849	80	37	
17	06	81	874	80	41	
18	8.508 8801	68	899	79	45	
19	8.508 8797	56	925	79	49	
20	8.508 8793	8.510 1343	1.46950	2.3878	6.3153	7.800
21	49	30	1.46976	78	57	
22	44	17	1.47001	78	61	
23	40	8.510 1305	425	77	65	
24	36	8.510 1292	452	77	69	
25	32	79	477	77	73	
26	27	67	503	76	78	
27	23	54	528	76	82	
28	19	41	553	75	86	
29	15	28	579	75	90	
30	8.508 8750	8.510 1216	1.47204	2.3875	6.3194	
31	46	8.510 1203	230	74	6.3188	
32	42	8.510 1190	255	74	6.3202	
33	38	78	281	73	96	
34	33	65	306	73	10	
35	29	52	331	73	15	
36	25	39	357	72	19	
37	21	27	382	72	23	
38	16	14	408	71	27	
39	12	8.510 1101	433	71	31	
40	8.508 8708	8.510 1088	1.47459	2.3871	6.3235	7.796
41	04	76	484	70	39	
42	8.508 8700	63	509	70	43	
43	8.508 8695	50	535	69	47	
44	91	38	560	69	52	
45	87	25	586	69	56	
46	83	12	611	68	60	
47	78	8.510 1000	637	68	64	
48	74	8.510 0987	662	67	68	
49	70	74	688	67	72	
50	8.508 8666	8.510 0962	1.47713	2.3866	6.3276	
51	61	49	738	66	81	
52	57	36	764	66	85	
53	53	23	789	65	89	
54	49	8.510 0911	815	65	93	
55	45	8.510 0898	840	64	6.3297	
56	40	85	866	64	6.3301	
57	36	73	891	63	05	
58	32	60	917	63	09	
59	28	48	942	63	14	
60	8.508 8623	8.510 0835	1.47968	2.3862	6.3318	7.792

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 50°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.43	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 10" = -2.0
50 00	8.508 8623	8.510 0635	1.47968	2.3862	6.3318	7.792
1	19	22	1.47993	62	22	
2	15	8.510 0809	1.48019	61	26	
3	11	8.510 0797	044	61	30	
4	06	84	670	60	34	
05	8.508 8602	71	095	60	39	
6	8.508 8598	59	121	60	43	
7	94	46	146	59	47	
8	90	33	172	59	51	
9	86	21	197	58	55	
10	8.508 8581	8.510 0708	1.48223	2.3868	6.3359	
11	77	8.510 0696	248	57	63	
12	73	83	274	57	68	
13	68	70	299	56	72	
14	64	57	325	56	76	
15	60	45	350	55	80	
16	56	32	376	55	84	
17	52	19	401	55	88	
18	47	8.510 0607	427	54	93	
19	43	8.510 0594	452	54	6.3397	
20	8.508 8539	8.510 0681	1.48478	2.3863	6.3401	7.788
21	35	69	504	53	06	
22	30	56	529	52	09	
23	26	43	556	52	14	
24	22	31	580	51	18	
25	18	18	606	51	22	
26	14	8.510 0505	631	50	26	
27	09	8.510 0493	657	50	30	
28	05	80	682	49	34	
29	8.508 8501	67	708	49	39	
30	8.508 8497	8.510 0455	1.48734	2.3848	6.3443	
31	93	42	759	48	47	
32	88	29	785	47	51	
33	84	17	810	47	55	
34	80	8.510 0404	836	46	60	
35	76	8.510 0392	861	46	64	
36	71	79	887	45	68	
37	67	66	913	45	72	
38	63	54	938	44	76	
39	59	41	964	44	81	
40	8.508 8455	8.510 0328	1.48989	2.3843	6.3485	7.784
41	50	16	1.49015	43	89	
42	46	8.510 0303	041	42	93	
43	42	8.510 0291	066	42	6.3497	
44	38	78	092	41	6.3502	
45	34	65	117	41	06	
46	29	53	143	40	10	
47	25	40	169	40	14	
48	21	27	194	39	18	
49	17	15	220	39	23	
50	8.508 8413	8.510 0202	1.49246	2.3835	6.3527	
51	08	8.510 0190	271	38	31	
52	04	77	297	37	35	
53	8.508 8400	64	322	37	40	
54	8.508 8396	52	348	36	44	
55	92	39	374	36	48	
56	87	27	399	35	52	
57	83	14	425	35	56	
58	79	8.510 0101	451	34	61	
59	75	8.510 0069	476	34	65	
60	8.508 8371	8.510 0076	1.49502	2.3833	6.3569	7.780

TABLE 22.—*Geodesic position computations—Continued.*

LATITUDE 31°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.45	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 10" = -22
31 00	8.508 8371	8.510 0075	1.49502	2.3833	6.3569	7.780
1	66	64	528	33	73	
2	62	51	553	32	78	
3	58	38	579	32	82	
4	54	26	605	31	86	
5	50	13	630	31	90	
6	45	8.510 0001	656	30	95	
7	41	8.509 9988	682	29	6.3599	
8	37	75	707	28	6.3603	
9	33	63	733	28	07	
10	8.508 8329	8.509 9950	1.47759	2.3828	6.3612	
11	24	38	785	27	16	
12	20	25	810	27	20	
13	16	13	836	26	24	
14	12	8.509 9900	862	26	28	
15	08	8.509 9887	887	25	33	
16	8.508 8303	75	913	25	37	
17	8.508 8299	62	939	24	41	
18	95	50	965	23	45	
19	91	37	1.49990	23	50	
20	8.508 8287	8.509 9825	1.50016	2.3822	6.3654	7.776
21	82	8.509 9812	942	22	58	
22	78	8.509 9799	967	21	63	
23	74	87	993	21	67	
24	70	74	119	20	71	
25	66	62	145	20	75	
26	62	49	170	19	80	
27	57	37	196	18	84	
28	53	24	222	18	88	
29	49	8.509 9711	248	17	92	
30	8.508 8245	8.509 9699	1.50273	2.3817	6.3697	
31	41	86	299	16	6.3701	
32	36	74	325	16	05	
33	32	61	351	15	10	
34	28	49	376	14	14	
35	24	36	402	14	18	
36	20	24	428	13	22	
37	16	8.509 9611	454	13	27	
38	11	8.509 9599	480	12	31	
39	07	86	505	11	35	
40	8.508 8203	8.509 9574	1.50531	2.3811	6.3740	7.772
41	8.508 8199	61	557	10	44	
42	95	48	583	10	48	
43	90	36	609	09	52	
44	86	23	634	08	57	
45	82	8.509 9511	660	08	61	
46	78	8.509 9498	686	07	65	
47	74	86	712	07	70	
48	70	73	738	06	74	
49	65	61	764	05	78	
50	8.508 8161	8.509 9448	1.50789	2.3805	6.3782	
51	57	36	815	04	87	
52	53	23	841	04	91	
53	49	8.509 9411	867	03	6.3795	
54	45	8.509 9398	893	02	6.3800	
55	40	86	919	02	04	
56	36	73	944	01	08	
57	32	61	970	01	13	
58	28	48	1.50996	2.3800	17	
59	24	36	1.51022	2.3799	21	
60	8.508 8120	8.509 9323	1.51048	2.3799	6.3826	7.767

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 52°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.43	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 10' = -2.3
52 00	8.508 8120	8.509 9323	1.51048	2.3799	6.3826	7.767
1	15	8.509 9311	074	98	30	
2	11	8.509 9298	100	97	34	
3	07	86	126	97	39	
4	8.508 8103	73	151	96	43	
05	8.508 8099	61	177	96	47	
6	96	48	203	95	52	
7	90	36	229	94	56	
8	86	23	255	94	60	
9	82	8.509 9211	281	93	65	
10	8.508 8078	8.509 9198	1.51307	2.3792	6.3869	
11	74	86	333	92	73	
12	70	73	359	91	78	
13	65	61	385	91	82	
14	61	48	411	90	86	
15	57	36	436	89	91	
16	53	23	462	88	95	
17	49	8.509 9111	488	88	6.3899	
18	45	8.509 9099	514	87	6.3904	
19	41	86	540	87	08	
20	8.508 8086	8.509 9074	1.51566	2.3786	6.3912	7.768
21	32	61	562	85	17	
22	28	49	618	85	21	
23	24	36	644	84	25	
24	20	24	670	83	30	
25	16	8.509 9011	696	83	34	
26	11	8.509 8999	722	82	38	
27	07	86	748	81	43	
28	8.508 8003	74	774	81	47	
29	8.508 7999	62	800	80	51	
30	8.508 7995	8.509 8949	1.51826	2.3779	6.3956	
31	91	37	852	79	60	
32	87	24	878	78	65	
33	82	8.509 8912	904	78	69	
34	78	8.509 8899	930	77	73	
35	74	87	956	76	78	
36	70	74	1.51982	75	82	
37	66	62	1.52008	75	86	
38	62	50	034	74	91	
39	58	37	060	73	6.3995	
40	8.508 7963	8.509 8825	1.52086	2.3773	6.4000	7.768
41	49	12	112	72	04	
42	45	8.509 8800	138	71	08	
43	41	8.509 8788	164	71	13	
44	37	75	190	70	17	
45	33	63	216	69	21	
46	29	50	242	68	25	
47	24	38	268	68	30	
48	20	25	294	67	35	
49	16	13	320	66	39	
50	8.508 7912	8.509 8701	1.52347	2.3766	7.4043	
51	08	8.509 8688	373	65	48	
52	04	76	399	64	52	
53	8.508 7900	63	425	64	57	
54	8.508 7896	51	451	63	61	
55	91	39	477	62	65	
56	87	26	503	61	70	
57	83	14	529	61	74	
58	79	8.509 8602	555	60	79	
59	75	8.509 8589	581	59	83	
60	8.508 7871	8.509 8577	1.52608	2.3759	6.4088	7.753

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 43°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = +0.00	log E diff. 1" = +0.06	log F diff. 10" = -1.0
43. 00	8.509 0419	8.510 6220	1.37386	2.3914	6.1684	7.854
1	14	8.510 6207	412	15	88	
2	10	8.510 6195	437	15	92	
3	06	82	462	15	95	
4	8.509 0401	69	487	15	6.1699	
05	8.509 0397	56	512	15	6.1703	
6	03	43	537	16	06	
7	89	30	563	16	10	
8	84	17	588	16	14	
9	80	8.510 6105	613	16	17	
10	8.509 0376	8.510 6092	1.37638	2.3916	6.1721	
11	71	79	663	16	25	
12	67	66	688	17	28	
13	63	53	713	17	32	
14	59	40	739	17	36	
15	54	28	764	17	39	
16	50	15	789	17	43	
17	46	8.510 6002	814	17	47	
18	41	8.510 5989	839	18	50	
19	37	76	864	18	54	
20	8.509 0333	8.510 5963	1.37889	2.3918	6.1758	7.852
21	29	50	915	18	61	
22	24	38	940	18	65	
23	20	25	965	18	69	
24	16	8.510 5912	1.37990	18	72	
25	12	8.510 5899	1.38015	19	76	
26	07	86	040	19	80	
27	8.509 0303	73	065	19	83	
28	8.509 0299	60	091	19	87	
29	94	48	116	19	91	
30	8.509 0290	8.510 5835	1.38141	2.3919	6.1795	
31	86	22	166	20	6.1798	
32	82	8.510 5809	191	20	6.1802	
33	77	8.510 5796	216	20	06	
34	73	83	241	20	09	
35	69	71	266	20	13	
36	64	58	292	20	17	
37	60	45	317	20	20	
38	56	32	342	20	24	
39	52	19	367	21	28	
40	8.509 0247	8.510 5706	1.38392	2.3921	6.1831	7.850
41	43	8.510 5693	417	21	35	
42	39	81	442	21	39	
43	34	68	467	21	42	
44	30	55	492	21	46	
45	26	42	518	21	50	
46	22	29	543	21	53	
47	17	16	568	22	57	
48	13	8.510 5603	593	22	61	
49	09	8.510 5591	618	22	65	
50	8.509 0204	8.510 5578	1.38643	2.3922	6.1868	
51	8.509 0200	65	668	22	72	
52	8.509 0196	52	693	22	76	
53	92	39	719	22	79	
54	87	26	744	22	83	
55	83	13	769	22	87	
56	79	8.510 5501	794	23	91	
57	74	8.510 5488	819	23	94	
58	70	75	844	23	6.1898	
59	66	62	869	23	6.1902	
60	8.509 0162	8.510 5449	1.38894	2.3923	6.1905	7.848

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 44°.

Lat.	log A diff. 1" = -0.07	log B. diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = +0.00	log E diff. 1" = +0.06	log F diff. 10' = 1.2
° /						
44 00	8.509 0162	8.510 5449	1.38894	2.3923	6.1905	7.848
1	57	36	919	23	09	
2	58	23	945	23	13	
3	49	8.510 5411	970	23	17	
4	44	8.510 5398	1.38995	23	20	
05	40	85	1.39020	23	24	
6	36	72	045	24	28	
7	31	59	070	24	31	
8	27	46	096	24	35	
9	23	33	120	24	39	
10	8.509 0119	8.510 5320	1.39145	2.3924	6.1943	
11	14	8.510 5307	171	24	46	
12	10	8.510 5295	196	24	50	
13	06	82	221	24	54	
14	8.509 0102	69	246	24	58	
15	8.509 0097	56	271	24	61	
16	93	43	296	24	65	
17	89	30	321	24	69	
18	84	18	346	24	72	
19	80	8.510 5205	371	25	76	
20	8.509 0076	8.510 5192	1.39396	2.3925	6.1980	7.845
21	72	79	422	25	84	
22	67	66	447	25	87	
23	63	53	472	25	91	
24	59	40	497	25	96	
25	54	28	522	25	6.1999	
26	50	15	547	25	6.2002	
27	46	8.510 5102	572	25	06	
28	42	8.510 5089	597	25	10	
29	37	76	623	25	14	
30	8.509 0033	8.510 5063	1.39648	2.3925	6.2017	
31	29	50	673	25	21	
32	24	37	698	25	25	
33	20	25	723	25	29	
34	16	8.510 5012	748	25	32	
35	11	8.510 4999	773	25	36	
36	07	86	798	26	40	
37	8.509 0003	73	823	26	44	
38	8.508 9999	60	848	26	47	
39	94	47	873	26	51	
40	8.508 9990	8.510 4935	1.39898	2.3926	6.2055	7.843
41	86	22	924	26	59	
42	81	8.510 4909	949	26	62	
43	77	8.510 4896	974	26	66	
44	73	83	1.39999	26	70	
45	69	70	1.40024	26	74	
46	64	57	049	26	77	
47	60	44	074	26	81	
48	56	32	099	26	85	
49	51	19	124	26	89	
50	8.508 9947	8.510 4806	1.40149	2.3926	6.2092	
51	43	8.510 4793	174	26	6.2096	
52	39	80	200	26	6.2100	
53	34	67	225	26	04	
54	30	54	250	26	08	
55	26	41	275	26	11	
56	21	29	300	26	15	
57	17	16	325	26	19	
58	13	8.510 4703	350	26	23	
59	09	8.510 4690	375	26	27	
60	8.508 9904	8.510 4677	1.40400	2.3926	6.2130	7.840



TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 45°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = +0.00	log E diff. 1" = +0.06	log F diff. 10' = -1.3
45 00	8.508 9904	8.510 4677	1.40400	2.3926	6.2130	7.840
1	8.508 9900	64	425	26	34	
2	8.508 9896	51	450	26	38	
3	91	39	475	26	42	
4	87	26	501	26	46	
05	83	13	526	26	49	
6	78	8.510 4600	551	26	53	
7	74	8.510 4587	576	26	57	
8	70	74	601	26	61	
9	66	61	626	26	64	
10	8.508 9861	8.510 4548	1.40651	2.3926	6.2168	
11	57	36	676	26	72	
12	53	23	701	26	76	
13	48	8.510 4510	727	26	80	
14	44	8.510 4497	752	26	83	
15	40	84	777	26	87	
16	36	71	802	26	91	
17	31	59	827	26	95	
18	27	46	852	26	6.2199	
19	23	33	877	26	6.2202	
20	8.508 9818	8.510 4420	1.40902	2.3926	6.2206	7.838
21	14	8.510 4407	927	26	10	
22	10	8.510 4394	952	26	14	
23	06	81	1.40978	26	18	
24	8.508 9801	68	1.41003	26	21	
25	8.508 9797	56	028	26	25	
26	93	43	053	26	29	
27	88	30	078	26	33	
28	84	17	103	26	37	
29	80	8.510 4304	128	26	40	
30	8.508 9776	8.510 4291	1.41153	2.3926	6.2244	
31	71	78	178	26	48	
32	67	65	203	26	52	
33	63	52	229	26	56	
34	58	40	254	26	60	
35	54	27	279	26	63	
36	50	14	304	25	67	
37	46	8.510 4201	329	25	71	
38	41	8.510 4188	354	25	75	
39	37	75	379	25	79	
40	8.508 9733	8.510 4162	1.41404	2.3925	6.2283	7.835
41	28	49	429	25	86	
42	24	37	454	25	90	
43	20	24	479	25	94	
44	16	8.510 4111	505	25	6.2298	
45	11	8.510 4098	530	25	6.2302	
46	07	85	555	25	06	
47	8.508 9703	72	580	25	09	
48	8.508 9698	60	605	25	13	
49	94	47	630	25	17	
50	8.508 9689	8.510 4064	1.41655	2.3925	6.2321	
51	85	21	680	25	25	
52	81	8.510 4008	705	25	29	
53	77	8.510 3995	731	25	32	
54	72	82	756	24	36	
55	68	69	781	24	40	
56	64	57	806	24	44	
57	60	44	831	24	48	
58	55	31	856	24	52	
59	51	18	881	24	55	
60	8.508 9647	8.510 3905	1.41906	2.3924	6.2359	7.832

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 46°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.00	log E diff. 1" = +0.06	log F diff. 10" = -1.4
° /						
46 00	8.508 9647	8.510 3906	1.41906	2.3924	6.2359	7.832
1	43	8.510 3892	981	24	63	
2	38	79	957	24	67	
3	34	67	1.41982	24	71	
4	30	54	1.42007	24	75	
05	25	41	082	24	79	
6	21	28	057	23	82	
7	17	15	082	23	86	
8	13	8.510 3802	107	23	90	
9	08	8.510 3789	132	23	94	
10	8.508 9604	8.510 3776	1.42157	2.3923	6.2398	
11	8.508 9600	64	183	23	6.2402	
12	8.508 9596	51	208	23	06	
13	91	38	233	23	09	
14	87	25	258	23	13	
15	83	8.510 3712	283	23	17	
16	78	8.510 3699	308	23	21	
17	74	86	333	22	25	
18	70	74	358	22	29	
19	65	61	384	22	33	
20	8.508 9561	8.510 3648	1.42409	2.3922	6.2436	7.830
21	57	35	434	22	40	
22	53	22	459	22	44	
23	48	8.510 3609	484	22	48	
24	44	8.510 3596	509	22	52	
25	40	84	534	22	56	
26	35	71	559	21	60	
27	31	58	584	21	64	
28	27	45	610	21	67	
29	23	32	635	21	71	
30	8.508 9518	8.510 3519	1.42660	2.3921	6.2475	
31	14	8.510 3506	685	21	79	
32	10	8.510 3494	710	21	83	
33	06	81	735	21	87	
34	8.508 9501	68	760	20	91	
35	8.508 9497	55	786	20	96	
36	98	42	811	20	6.2499	
37	88	29	836	20	6.2502	
38	84	17	861	20	06	
39	80	8.510 3404	886	20	10	
40	8.508 9475	8.510 3391	1.42911	2.3920	6.2514	7.827
41	71	78	936	19	18	
42	67	65	961	19	22	
43	63	52	1.42987	19	26	
44	58	39	1.43012	19	30	
45	54	27	037	19	34	
46	50	14	062	19	38	
47	45	8.510 3301	087	19	41	
48	41	8.510 3288	112	18	45	
49	37	75	137	18	49	
50	8.508 9433	8.510 3262	1.43163	2.3918	6.2553	
51	28	49	188	18	57	
52	24	37	213	18	61	
53	20	24	238	18	65	
54	16	8.510 3211	263	18	69	
55	11	8.510 3198	288	17	73	
56	07	85	314	17	77	
57	8.508 9403	72	339	17	81	
58	8.508 9398	60	364	17	84	
59	94	47	389	17	88	
60	8.508 9390	8.510 3134	1.43414	2.3917	6.2592	7.824

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 47°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.00	log E diff. 1" = +0.07	log F diff. 1" = -1.6
0						
47 00	8.508 9390	8.510 3134	1.43414	2.3917	6.2592	7.824
1	86	21	439	16	6.2596	
2	81	8.510 3108	465	16	6.2600	
3	77	8.510 3095	490	16	04	
4	73	82	515	16	08	
05	68	70	540	16	12	
6	64	57	565	16	16	
7	60	44	590	15	20	
8	56	31	615	15	24	
9	51	18	641	15	28	
10	8.508 9347	8.510 3005	1.43666	2.3915	6.2632	
11	43	8.510 2993	691	15	35	
12	38	80	716	14	39	
13	34	67	741	14	43	
14	30	54	766	14	47	
15	26	41	792	14	51	
16	21	28	817	14	55	
17	17	16	842	13	59	
18	13	8.510 2903	867	13	63	
19	09	8.510 2890	892	13	67	
20	8.508 9304	8.510 2877	1.43917	2.3913	6.2671	7.821
21	8.508 9300	64	943	13	75	
22	8.508 9296	51	968	12	79	
23	91	39	1.43993	12	83	
24	87	26	1.44018	12	87	
25	83	13	043	12	91	
26	79	8.510 2800	069	12	95	
27	74	8.510 2787	094	11	6.2699	
28	70	74	119	11	6.2702	
29	66	62	144	11	06	
30	8.508 9261	8.510 2749	1.44169	2.3911	6.2710	
31	57	36	195	11	14	
32	53	23	220	10	18	
33	49	8.510 2710	245	10	22	
34	44	8.510 2698	270	10	26	
35	40	85	295	10	30	
36	36	72	321	10	34	
37	32	59	346	09	38	
38	27	46	371	09	42	
39	23	33	396	09	46	
40	8.508 9219	8.510 2621	1.44421	2.3909	6.2750	7.817
41	14	8.510 2608	447	08	54	
42	10	8.510 2595	472	08	58	
43	06	82	497	08	62	
44	8.508 9202	69	522	08	66	
45	8.508 9197	57	547	07	70	
46	93	44	573	07	74	
47	89	31	598	07	78	
48	84	18	623	07	82	
49	80	8.510 2505	648	07	86	
50	8.508 9176	8.510 2493	1.44673	2.3906	6.2790	
51	72	80	699	06	94	
52	67	67	724	06	6.2798	
53	63	54	749	06	6.2802	
54	59	41	774	05	06	
55	55	28	800	05	10	
56	50	16	825	05	14	
57	46	8.510 2403	850	05	18	
58	42	8.510 2390	875	04	22	
59	38	77	900	04	26	
60	8.508 9133	8.510 2364	1.44926	2.3904	6.2830	7.814

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 48°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.00	log E diff. 1" = +0.07	log F diff. 10" = -1.7
48 00	8.508 9133	8.510 2364	1.44926	2.3904	6.2830	7.814
01	29	52	951	04	34	
02	25	39	1.44976	03	38	
03	20	26	1.45001	03	42	
04	16	13	027	03	46	
05	12	8.510 2300	052	02	50	
06	08	8.510 2288	077	02	54	
07	8.508 9103	75	102	02	58	
08	8.508 9099	62	128	02	62	
09	96	49	153	01	66	
10	8.508 9091	8.510 2236	1.46178	2.3901	6.2870	
11	86	24	203	01	74	
12	82	8.510 2211	229	01	78	
13	78	8.510 2198	251	00	82	
14	74	85	279	00	86	
15	69	72	304	2.3900	90	
16	65	60	330	2.3899	94	
17	61	47	355	99	6.2898	
18	57	34	380	99	6.2902	
19	52	21	406	99	06	
20	8.508 9048	8.510 2106	1.45431	2.3898	6.2910	7.811
21	44	8.510 2096	456	98	14	
22	39	83	481	98	18	
23	35	70	507	97	22	
24	31	57	532	97	26	
25	27	45	557	97	30	
26	22	32	582	97	34	
27	18	19	606	96	38	
28	14	8.510 2006	633	96	42	
29	10	8.510 1993	658	96	46	
30	8.508 9005	8.510 1981	1.45683	2.3895	6.2950	
31	8.508 9001	68	709	95	54	
32	8.508 8997	55	734	95	58	
33	93	42	759	95	62	
34	88	30	785	94	66	
35	84	17	810	94	70	
36	80	8.510 1904	835	94	74	
37	76	8.510 1891	861	93	78	
38	71	78	886	93	82	
39	67	66	911	93	86	
40	8.508 8963	8.510 1853	1.45937	2.3892	6.2990	7.807
41	59	40	962	92	94	
42	54	27	1.45987	92	6.2998	
43	50	15	1.46012	91	6.3002	
44	46	8.510 1802	038	91	06	
45	41	8.510 1789	063	91	10	
46	37	76	088	90	15	
47	33	64	114	90	19	
48	29	51	139	90	23	
49	24	38	164	89	27	
50	8.508 8920	8.510 1725	1.46190	2.3889	6.3031	
51	16	13	215	89	35	
52	12	8.510 1700	240	88	39	
53	08	8.510 1687	266	88	43	
54	8.508 8903	74	291	88	47	
55	8.508 8899	62	316	87	51	
56	95	49	342	87	55	
57	90	36	367	87	59	
58	86	23	392	86	63	
59	82	8.510 1610	418	86	67	
60	8.508 8878	8.510 1598	1.46443	2.3886	6.3071	7.804

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 49°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 10' = -1.3
49 00	8.508 8878	8.510 1508	1.46443	2.3886	6.3071	7.804
1	73	85	468	85	75	
2	69	72	494	85	79	
3	65	59	519	85	84	
4	61	47	544	84	88	
05	57	34	570	84	92	
6	52	21	595	84	6.3096	
7	48	8.510 1508	621	83	6.3100	
8	44	8.510 1496	646	83	04	
9	39	83	671	83	08	
10	8.508 8835	8.510 1470	1.46696	2.3882	6.3112	
11	31	58	722	82	16	
12	27	45	747	81	20	
13	23	32	773	81	24	
14	18	19	798	81	28	
15	14	8.510 1407	824	80	32	
16	10	8.510 1394	849	80	37	
17	06	81	874	80	41	
18	8.508 8801	68	899	79	45	
19	8.508 8797	56	925	79	49	
20	8.508 8793	8.510 1343	1.46950	2.3878	6.3133	7.800
21	89	30	1.46976	78	57	
22	84	17	1.47001	78	61	
23	80	8.510 1305	026	77	65	
24	76	8.510 1292	052	77	69	
25	72	79	077	77	73	
26	67	67	103	76	78	
27	63	54	128	76	82	
28	59	41	153	75	86	
29	55	28	179	75	90	
30	8.508 8750	8.510 1216	1.47204	2.3875	6.3194	
31	46	8.510 1203	230	74	6.3198	
32	42	8.510 1190	255	74	6.3202	
33	38	78	281	73	06	
34	33	65	306	73	10	
35	29	52	331	73	15	
36	25	39	357	72	19	
37	21	27	382	72	23	
38	16	14	408	71	27	
39	12	8.510 1101	433	71	31	
40	8.508 8708	8.510 1088	1.47459	2.3871	6.3235	7.796
41	04	76	454	70	39	
42	8.508 8700	63	509	70	43	
43	8.508 8695	50	535	69	47	
44	91	38	560	69	52	
45	87	25	586	69	56	
46	83	12	611	68	60	
47	78	8.510 1000	637	68	64	
48	74	8.510 0987	662	67	68	
49	70	74	688	67	72	
50	8.508 8666	8.510 0962	1.47713	2.3866	6.3276	
51	61	49	738	66	81	
52	57	36	764	66	85	
53	53	23	789	65	89	
54	49	8.510 0911	815	65	93	
55	45	8.510 0898	840	64	6.3297	
56	40	85	866	64	6.3301	
57	36	73	891	63	05	
58	32	60	917	63	09	
59	28	48	942	63	14	
60	8.508 8623	8.510 0835	1.47968	2.3862	6.3318	7.792

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 50°.

Lat.	log A diff. 1'' = -0.07	log B diff. 1'' = -0.21	log C diff. 1'' = +0.43	log D diff. 1'' = -0.01	log E diff. 1'' = +0.07	log F diff. 10' = -2.0
50 00	8.508 8628	8.510 0835	1.47968	2.3862	6.3318	7.792
1	19	22	1.47993	62	22	
2	15	8.510 0809	1.48019	61	26	
3	11	8.510 0797	044	61	30	
4	06	84	670	60	34	
05	8.508 8602	71	095	60	39	
6	8.508 8598	59	121	60	43	
7	94	46	146	59	47	
8	90	38	172	59	51	
9	85	21	197	58	55	
10	8.508 8581	8.510 0708	1.48223	2.3858	6.3359	
11	77	8.510 0696	248	57	63	
12	73	83	274	57	68	
13	68	70	299	56	72	
14	64	57	325	56	76	
15	60	45	350	55	80	
16	56	32	376	55	84	
17	52	19	401	55	88	
18	47	8.510 0607	427	54	93	
19	43	8.510 0594	452	54	6.3397	
20	8.508 8589	8.510 0581	1.48478	2.3853	6.3401	7.788
21	35	69	504	53	06	
22	30	56	529	52	09	
23	26	43	555	52	14	
24	22	31	580	51	18	
25	18	18	606	51	22	
26	14	8.510 0606	631	50	26	
27	09	8.510 0493	657	50	30	
28	05	80	682	49	34	
29	8.508 8501	67	708	49	39	
30	8.508 8497	8.510 0456	1.48734	2.3848	6.3443	
31	93	42	759	48	47	
32	88	29	785	47	51	
33	84	17	810	47	55	
34	80	8.510 0404	836	46	60	
35	76	8.510 0392	861	46	64	
36	71	79	887	45	68	
37	67	66	913	45	72	
38	63	54	938	44	76	
39	59	41	964	44	81	
40	8.508 8455	8.510 0328	1.48989	2.3843	6.3485	7.784
41	50	16	1.49015	43	89	
42	46	8.510 0303	041	42	93	
43	42	8.510 0291	066	42	6.3497	
44	38	78	092	41	6.3502	
45	34	65	117	41	06	
46	29	53	143	40	10	
47	25	40	169	40	14	
48	21	27	194	39	18	
49	17	15	220	39	23	
50	8.508 8418	8.510 0202	1.49246	2.3835	6.3527	
51	04	8.510 0190	271	38	31	
52	04	77	297	37	35	
53	8.508 8400	64	322	37	40	
54	8.508 8396	52	348	36	44	
55	92	39	374	36	48	
56	87	27	399	35	52	
57	83	14	425	35	56	
58	79	8.510 0101	451	34	61	
59	75	8.510 0069	476	34	65	
60	8.508 8371	8.510 0076	1.49602	2.3833	6.3569	7.780

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 51°.

Lat.	log A diff. 1° = -0.07	log B diff. 1° = -0.21	log C diff. 1° = +0.43	log D diff. 1° = -0.01	log E diff. 1° = +0.07	log F diff. 1° = -2.2
51 00	8.508 8371	8.510 0076	1.49502	2.3833	6.3569	7.780
1	66	64	528	83	78	
2	62	51	553	82	78	
3	58	38	579	82	82	
4	54	26	605	81	86	
05	50	13	630	81	90	
6	45	8.510 0001	656	80	95	
7	41	8.509 9988	682	29	6.3569	
8	37		707	29	6.3603	
9	33	63	733	28	07	
10	8.508 8329	8.509 9950	1.47759	2.3828	6.3612	
11	24	38	785	27	16	
12	20	25	810	27	20	
13	16	13	836	26	24	
14	12	8.509 9900	862	26	28	
15	08	8.509 9887	887	25	33	
16	8.508 8303	75	913	25	37	
17	8.508 8299	62	939	24	41	
18	95	50	965	23	45	
19	91	37	1.49990	23	50	
20	8.508 8287	8.509 9825	1.50016	2.3822	6.3654	7.776
21	82	8.509 9812	042	22	56	
22	78	8.509 9799	067	21	63	
23	74	87	093	21	67	
24	70	74	119	20	71	
25	66	62	145	20	75	
26	62	49	170	19	80	
27	57	37	196	18	84	
28	53	24	222	18	88	
29	49	8.509 9711	248	17	92	
30	8.508 8245	8.509 9699	1.50273	2.3817	6.3697	
31	41	86	299	16	6.3701	
32	36	74	325	16	05	
33	32	61	351	15	10	
34	28	49	376	14	14	
35	24	36	402	14	18	
36	20	24	428	13	22	
37	16	8.509 9611	454	13	27	
38	11	8.509 9599	480	12	31	
39	07	86	505	11	35	
40	8.508 8203	8.509 9574	1.50531	2.3811	6.3740	7.772
41	8.508 8199	61	557	10	44	
42	95	48	583	10	48	
43	90	36	609	09	52	
44	86	23	634	08	57	
45	82	8.509 9611	660	08	61	
46	78	8.509 9498	686	07	65	
47	74	86	712	07	70	
48	70	73	738	06	74	
49	65	61	764	05	78	
50	8.508 8161	8.509 9448	1.50789	2.3805	6.3782	
51	57	36	815	04	87	
52	53	23	841	04	91	
53	49	8.509 9411	867	03	6.3795	
54	45	8.509 9398	893	02	6.3800	
55	40	86	919	02	04	
56	36	73	944	01	08	
57	32	61	970	01	13	
58	28	48	1.50996	2.3800	17	
59	24	36	1.51022	2.3799	21	
60	8.508 8120	8.509 9323	1.51048	2.3799	6.3826	7.767

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 52°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.43	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 10" = -2.3
52 00	8.508 8120	8.509 9323	1.51048	2.3799	6.3826	7.767
1	15	8.509 9311	074	98	30	
2	11	8.509 9298	100	97	34	
3	07	86	126	97	39	
4	8.508 8103	73	151	96	43	
05	8.508 8099	61	177	96	47	
6	95	48	203	96	52	
7	90	36	229	94	56	
8	86	23	255	94	60	
9	82	8.509 9211	281	93	65	
10	8.508 8078	8.509 9198	1.51307	2.3792	6.3869	
11	74	86	333	92	73	
12	70	73	359	91	78	
13	65	61	385	91	82	
14	61	48	411	90	86	
15	57	36	436	89	91	
16	53	23	462	88	95	
17	49	8.509 9111	488	88	6.3899	
18	45	8.509 9099	514	87	6.3904	
19	41	86	540	87	08	
20	8.508 8036	8.509 9074	1.51566	2.3786	6.3912	7.768
21	32	61	592	86	17	
22	28	49	618	86	21	
23	24	36	644	84	25	
24	20	24	670	83	30	
25	16	8.509 9011	696	83	34	
26	11	8.509 8999	722	82	38	
27	07	86	748	81	43	
28	8.508 8003	74	774	81	47	
29	8.508 7999	62	800	80	51	
30	8.508 7995	8.509 8949	1.51826	2.3779	6.3956	
31	91	37	832	79	60	
32	87	24	858	78	65	
33	82	8.509 8912	904	78	69	
34	78	8.509 8899	930	77	73	
35	74	87	956	76	78	
36	70	74	1.51982	75	82	
37	66	62	1.52008	75	86	
38	62	50	034	74	91	
39	58	37	060	73	6.3995	
40	8.508 7953	8.509 8825	1.52086	2.3773	6.4000	7.758
41	49	12	112	72	04	
42	45	8.509 8800	138	71	08	
43	41	8.509 8788	164	71	13	
44	37	75	190	70	17	
45	33	63	216	69	21	
46	29	50	242	68	26	
47	24	38	268	68	30	
48	20	25	294	67	35	
49	16	13	320	66	39	
50	8.508 7912	8.509 8701	1.52347	2.3766	7.4043	
51	08	8.509 8688	373	65	48	
52	04	76	399	64	52	
53	8.508 7900	63	425	64	57	
54	8.508 7895	51	451	63	61	
55	91	39	477	62	65	
56	87	26	503	61	70	
57	83	14	529	61	74	
58	79	8.509 8602	555	60	79	
59	75	8.509 8589	581	59	83	
60	8.508 7871	8.509 8577	1.52608	2.3759	6.4088	7.753



TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 58°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.41	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 10' = -2.5
33 00	8.508 7871	8.509 8577	1.52608	2.3759	6.4088	7.758
1	67	64	634	58	92	
2	62	52	660	57	6.4096	
3	58	40	686	56	6.4101	
4	54	27	712	56	05	
05	50	15	738	55	10	
6	46	8.509 8502	764	54	14	
7	42	8.509 8490	790	53	18	
8	38	78	817	53	23	
9	34	65	843	52	27	
10	8.508 7829	8.509 8453	1.52869	2.3751	6.4132	
11	25	41	895	51	36	
12	21	28	921	50	41	
13	17	16	947	49	45	
14	13	8.509 8404	1.52974	48	49	
15	09	8.509 8391	1.53000	48	54	
16	05	79	026	47	58	
17	8.508 7801	67	052	46	63	
18	8.508 7797	54	078	45	67	
19	92	42	105	45	72	
20	8.508 7788	8.509 8329	1.53131	2.3744	6.4176	7.748
21	84	17	157	43	80	
22	80	8.509 8305	183	42	85	
23	76	8.509 8292	209	42	89	
24	72	80	236	41	94	
25	68	68	262	40	6.4198	
26	64	55	288	39	6.4203	
27	60	43	314	39	07	
28	55	31	341	38	12	
29	51	18	367	37	16	
30	8.508 7747	8.509 8296	1.53393	2.3736	6.4221	
31	43	8.509 8194	419	36	25	
32	39	82	446	35	29	
33	35	69	472	34	34	
34	31	57	498	33	38	
35	27	45	524	33	43	
36	23	32	551	32	47	
37	18	20	577	31	52	
38	14	8.509 8108	603	30	56	
39	10	8.509 8095	630	29	61	
40	8.508 7706	8.509 8083	1.53656	2.3729	6.4265	7.743
41	8.508 7702	71	682	28	70	
42	8.508 7698	58	709	27	74	
43	94	46	735	26	79	
44	90	34	761	26	83	
45	86	22	788	25	88	
46	82	8.509 8009	814	24	92	
47	77	8.509 7997	840	23	6.4297	
48	73	85	867	22	6.4301	
49	69	72	893	22	06	
50	8.508 7665	8.509 7960	1.53919	2.3721	6.4310	
51	61	48	946	20	15	
52	57	36	972	19	19	
53	53	23	1.53998	18	24	
54	49	8.509 7911	1.54025	18	28	
55	45	8.509 7899	051	17	33	
56	41	87	077	16	37	
57	37	74	104	15	42	
58	32	62	130	14	46	
59	28	50	157	14	51	
60	8.508 7624	8.509 7838	1.54183	2.3713	6.4355	7.738

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 54°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.20	log C diff. 1" = +0.44	log D diff. 1" = -0.01	log E diff. 1" = +0.08	log F diff. 10" = -2.6
54 00	8.508 7624	8.509 7838	1.54183	2.3713	6.4355	7.738
1	20	25	209	12	60	
2	16	13	236	11	64	
3	12	8.509 7801	262	10	69	
4	08	8.509 7789	288	09	73	
05	04	76	315	09	78	
6	8.508 7600	64	341	08	82	
7	8.508 7596	52	368	07	87	
8	92	40	394	06	91	
9	88	27	421	05	6.4396	
10	8.508 7584	8.509 7716	1.54447	2.3705	6.4400	
11	79	8.509 7703	474	04	05	
12	75	8.509 7691	500	03	09	
13	71	78	527	02	14	
14	67	66	553	01	18	
15	63	54	580	00	23	
16	59	42	606	2.3700	28	
17	55	30	633	2.3699	32	
18	51	17	659	98	37	
19	47	8.509 7605	686	97	41	
20	8.508 7543	8.509 7593	1.54712	2.3696	6.4446	7.733
21	39	81	739	95	50	
22	35	69	765	94	55	
23	31	56	792	94	59	
24	27	44	818	93	64	
25	22	32	845	92	68	
26	18	20	871	91	73	
27	14	8.509 7508	898	90	78	
28	10	8.509 7495	924	89	82	
29	06	83	951	88	87	
30	8.508 7502	8.509 7471	1.54977	2.3688	6.4491	
31	8.508 7498	59	1.55001	87	6.4496	
32	94	47	031	86	6.4500	
33	90	34	057	85	05	
34	86	22	084	84	09	
35	82	8.509 7410	110	83	14	
36	78	8.509 7398	137	82	19	
37	74	86	163	82	23	
38	70	74	190	81	28	
39	66	61	217	80	32	
40	8.508 7462	8.509 7349	1.55243	2.3679	6.4537	7.728
41	58	37	270	78	41	
42	53	25	297	77	46	
43	49	13	323	76	51	
44	45	8.509 7301	350	75	55	
45	41	8.509 7289	376	74	60	
46	37	76	403	74	64	
47	33	64	430	73	69	
48	29	52	456	72	74	
49	25	40	483	71	78	
50	8.508 7421	8.509 7228	1.55510	2.3670	6.4583	
51	17	16	536	69	87	
52	13	8.509 7204	563	68	92	
53	09	8.509 7191	590	67	6.4597	
54	05	79	616	66	6.4601	
55	8.508 7401	67	643	66	06	
56	8.508 7397	55	670	65	10	
57	93	43	696	64	15	
58	89	31	723	63	20	
59	85	19	750	62	24	
60	8.508 7381	8.509 7107	1.55777	2.3661	6.4629	7.723

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 55°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.20	log C diff. 1" = +0.5	log D diff. 1" = -0.02	log E diff. 1" = +0.08	log F diff. 1" = -2.8
55 00	8.508 7381	8.509 7107	1.55777	2.3661	6.4629	7.723
1	77	8.509 7095	893	60	33	
2	73	82	830	59	38	
3	69	70	857	58	43	
4	65	58	884	57	47	
05	61	46	910	56	52	
6	56	34	937	55	57	
7	52	22	964	55	61	
8	48	8.509 7010	1.55991	54	66	
9	44	8.509 6998	1.56017	53	70	
10	8.508 7340	8.509 6986	1.56044	2.3652	6.4675	
11	36	74	971	51	80	
12	32	62	998	50	84	
13	28	49	125	49	89	
14	24	37	151	48	94	
15	20	25	178	47	6.4698	
16	16	13	205	46	6.4703	
17	12	8.509 6901	232	45	08	
18	08	8.509 6889	259	44	12	
19	04	77	286	43	17	
20	8.508 7300	8.509 6865	1.56312	2.3642	6.4721	7.717
21	8.508 7296	53	339	42	26	
22	92	41	366	41	31	
23	88	29	393	40	35	
24	84	17	420	39	40	
25	80	8.509 6805	447	38	45	
26	76	8.509 6793	474	37	49	
27	72	81	500	36	54	
28	68	69	527	35	59	
29	64	57	554	34	63	
30	8.508 7260	8.509 6745	1.56581	2.3633	6.4768	
31	56	33	608	32	73	
32	52	21	635	31	77	
33	48	8.509 6709	662	30	82	
34	44	8.509 6696	689	29	87	
35	40	84	716	28	91	
36	36	72	743	27	6.4796	
37	32	60	770	26	6.4801	
38	28	48	797	25	05	
39	24	36	823	24	10	
40	8.508 7220	8.509 6624	1.56850	2.3623	6.4815	7.711
41	16	12	877	22	20	
42	12	8.509 6600	901	21	24	
43	08	8.509 6588	931	20	29	
44	04	76	958	19	34	
45	8.508 7200	64	1.56985	18	38	
46	8.508 7196	52	1.57012	17	43	
47	92	40	939	16	48	
48	88	28	966	15	52	
49	84	16	993	14	57	
50	8.508 7180	8.509 6505	1.57120	2.3613	6.4862	
51	76	8.509 6493	147	12	66	
52	72	81	174	11	71	
53	68	69	201	10	76	
54	64	57	229	09	81	
55	60	45	256	08	85	
56	56	33	283	07	90	
57	52	21	310	06	6.4895	
58	48	8.509 6409	337	05	6.4900	
59	44	8.509 6397	364	04	04	
60	8.508 7140	8.509 6385	1.57391	2.3603	6.4909	7.706

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 56°.

Lat.	log A diff. 1'' = -0.07	log B diff. 1'' = -0.20	log C diff. 1'' = +0.45	log D diff. 1'' = -0.02	log E diff. 1'' = +0.08	log F diff. 10'' = -3.0
° /						
56 00	8.508 7140	8.509 6385	1.57391	2.3603	6.4909	7.706
1	36	73	418	02	14	
2	32	61	445	01	18	
3	28	49	472	2.3600	23	
4	24	37	499	2.3599	28	
05	20	25	526	98	33	
6	16	13	554	97	37	
7	12	8.509 6301	581	96	42	
8	08	8.509 6289	608	95	47	
9	04	77	635	94	52	
10	8.508 7100	8.509 6266	1.57662	2.3593	6.4956	
11	8.508 7086	54	689	92	61	
12	92	42	717	91	66	
13	88	30	744	90	71	
14	84	18	771	89	75	
15	80	8.509 6206	798	88	80	
16	76	8.509 6194	825	87	85	
17	72	82	852	86	90	
18	69	70	880	85	94	
19	65	58	907	84	6.4999	
20	8.508 7061	8.509 6147	1.57934	2.3583	6.5004	7.700
21	57	35	961	82	09	
22	53	23	1.57989	81	13	
23	49	8.509 6111	1.58016	80	18	
24	45	8.509 6099	043	78	23	
25	41	87	070	77	28	
26	37	75	098	76	32	
27	33	63	125	75	37	
28	29	51	152	74	42	
29	25	40	179	73	47	
30	8.508 7021	8.509 6028	1.58207	2.3572	6.5052	
31	17	16	234	71	56	
32	13	8.509 6004	261	70	61	
33	09	8.509 5992	289	69	66	
34	05	80	316	68	71	
35	8.508 7001	68	343	67	75	
36	8.508 6997	57	371	66	80	
37	93	45	398	65	85	
38	89	33	425	64	90	
39	86	21	453	62	95	
40	8.508 6982	8.509 5909	1.58480	2.3561	6.5099	7.694
41	78	8.509 5897	507	60	6.5104	
42	74	86	535	59	09	
43	70	74	562	58	14	
44	66	62	589	57	19	
45	62	50	617	56	24	
46	58	38	644	55	28	
47	54	27	672	54	33	
48	50	15	699	53	38	
49	46	8.509 5808	726	52	43	
50	8.508 6942	8.509 5791	1.58754	2.3550	6.5148	
51	42	79	781	49	52	
52	38	67	809	48	57	
53	34	56	836	47	62	
54	30	44	864	46	67	
55	26					
56	23	32	891	45	72	
57	19	20	919	44	77	
58	15	8.509 5709	946	43	81	
59	11	8.509 5697	1.58971	42	86	
60	07	85	1.59001	41	91	
60	8.508 6903	8.509 5673	1.59028	2.3539	6.5196	7.688

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 57°.

Lat.	log A		log B		log C		log D		log E		log F	
	diff. 1" = -0.06		diff. 1" = -0.19		diff. 1" = +0.46		diff. 1" = -0.02		diff. 1" = +0.08		diff. 10" = -3.2	
57 00	8.508 6903		8.509 5673		1.59028		2.3539		6.5196		7.688	
1	8.508 6899		61		056		38		6.5201			
2	95		50		083		37		06			
3	91		38		111		36		10			
4	87		26		139		35		15			
05	83		14		166		34		20			
6	79		8.509 5603		194		33		25			
7	75		8.509 5591		221		32		30			
8	72		79		249		30		35			
9	68		67		276		29		40			
10	8.508 6864		8.509 5556		1.59304		2.3528		6.5244			
11	60		44		331		27		49			
12	56		32		359		26		54			
13	52		20		387		25		59			
14	48		8.509 5509		414		24		64			
15	44		8.509 5497		442		22		69			
16	40		85		469		21		74			
17	36		73		497		20		79			
18	32		62		525		19		83			
19	28		50		552		18		88			
20	8.508 6825		8.509 5438		1.59580		2.3517		6.5293		7.682	
21	21		27		608		16		6.5298			
22	17		15		635		14		6.5303			
23	13		8.509 5403		663		13		08			
24	09		8.509 5392		691		12		13			
25	05		80		718		11		18			
26	8.508 6801		68		746		10		22			
27	8.508 6797		56		774		09		27			
28	93		45		801		07		32			
29	90		33		829		06		37			
30	8.508 6786		8.509 5321		1.59857		2.3505		6.5342			
31	82		8.509 5310		885		04		47			
32	78		8.509 5298		912		03		52			
33	74		86		940		02		57			
44	70		75		968		2.3500		62			
35	66		63		1.59996		2.3499		67			
36	62		51		1.60023		98		72			
37	58		40		051		97		76			
38	54		28		079		96		81			
39	51		16		107		95		86			
40	8.508 6747		8.509 5205		1.60134		2.3493		6.5391		7.675	
41	43		8.509 5193		162		92		6.5396			
42	39		81		190		91		6.5401			
43	35		70		218		90		06			
44	31		58		246		89		11			
45	27		46		274		87		16			
46	23		35		301		86		21			
47	20		23		329		85		26			
48	16		12		357		84		31			
49	12		8.509 5100		385		83		36			
50	8.508 6708		8.509 5088		1.60413		2.3481		6.5441			
51	04		77		441		80		46			
52	8.508 6700		65		469		79		50			
53	8.508 6696		54		496		78		55			
54	92		42		524		76		60			
55	89		30		552		75		65			
56	85		19		580		74		70			
57	81		8.509 5007		608		73		75			
58	77		8.509 4996		636		72		80			
59	73		84		664		70		85			
60	8.508 6669		8.509 4972		1.60692		2.3469		6.5490		7.669	

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 58°.

Lat.	log A diff. 1° = -0.06	log B diff. 1° = -0.19	log C diff. 1° = +0.47	log D diff. 1° = -0.02	log E diff. 1° = +0.08	log F diff. 10° = -3.3
58 00	8.508 6669	8.509 4972	1.60692	2.3469	6.5490	7.669
1	65	61	720	68	6.5495	
2	62	49	748	67	6.5500	
3	58	38	776	66	65	
4	54	26	804	64	10	
05	50	14	832	63	15	
6	46	8.509 4903	860	62	20	
7	42	8.509 4891	888	61	25	
8	38	80	916	59	30	
9	35	68	944	58	35	
10	8.508 6631	8.509 4857	1.60972	2.3457	6.5540	
11	27	45	1.61000	56	45	
12	23	33	028	54	50	
13	19	22	056	53	55	
14	15	8.509 4810	084	52	60	
15	11	8.509 4799	112	51	65	
16	08	87	140	49	70	
17	04	76	168	48	75	
18	8.508 6600	64	197	47	80	
19	8.508 6596	53	225	46	85	
20	8.508 6592	8.509 4741	1.61253	2.3444	6.5590	7.662
21	88	30	281	43	6.5595	
22	85	18	309	42	6.5600	
23	81	8.509 4707	337	41	65	
24	77	8.509 4695	365	39	10	
25	73	84	393	38	15	
26	69	72	422	37	20	
27	65	61	450	35	25	
28	62	49	478	34	30	
29	58	38	506	33	35	
30	8.508 6564	8.509 4626	1.61534	2.3432	6.5640	
31	50	15	563	30	45	
32	46	8.509 4603	591	29	50	
33	42	8.509 4592	619	28	55	
34	39	80	647	26	60	
35	35	69	675	25	65	
36	31	57	704	24	70	
37	27	46	732	23	75	
38	23	35	760	21	80	
39	20	23	789	20	85	
40	8.508 6516	8.509 4512	1.61817	2.3419	6.5691	7.656
41	12	8.509 4500	845	17	6.5696	
42	08	8.509 4489	873	16	6.5701	
43	04	77	902	15	65	
44	8.508 6500	66	930	14	11	
45	8.508 6497	54	958	12	16	
46	93	43	1.61987	11	21	
47	89	32	1.62015	10	26	
48	85	20	043	08	31	
49	81	8.509 4409	072	07	36	
50	8.508 6478	8.509 4397	1.62100	2.3406	6.5741	
51	74	86	129	04	46	
52	70	74	157	03	51	
53	66	63	185	02	56	
54	62	52	214	2.3400	62	
55	59	40	242	2.3399	67	
56	55	29	271	98	72	
57	51	17	299	96	77	
58	47	8.509 4306	327	95	82	
59	43	8.509 4295	356	94	87	
60	8.508 6440	8.509 4283	1.62384	2.3392	6.5792	7.649

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 50°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.19	log C diff. 1" = +0.48	log D diff. 1" = -0.02	log E diff. 1" = +0.09	log F diff. 10" = -3.5
59 00	8.508 6440	8.509 4283	1.62384	2.3392	6.5792	7.649
1	36	72	413	91	6.5797	
2	32	61	441	90	6.5802	
3	28	49	470	88	07	
4	24	38	498	87	13	
5	21	26	527	86	18	
6	17	15	555	84	23	
7	13	8.509 4204	584	83	28	
8	09	8.509 4192	612	82	33	
9	05	81	641	80	38	
10	8.508 6402	8.509 4170	1.62369	2.3379	6.5848	
11	8.508 6398	58	698	78	48	
12	94	47	727	76	54	
13	90	36	755	75	59	
14	87	24	784	74	64	
15	83	13	812	72	69	
16	79	8.509 4102	841	71	74	
17	75	8.509 4090	870	69	79	
18	71	79	898	68	84	
19	68	68	927	67	89	
20	8.508 6364	8.509 4056	1.62355	2.3365	6.5895	7.642
21	60	45	1.62384	64	6.5900	
22	56	34	1.63013	63	05	
23	52	22	041	61	10	
24	49	11	070	60	15	
25	45	8.509 4000	099	58	20	
26	41	8.509 3989	127	57	25	
27	38	77	156	56	31	
28	34	66	185	54	36	
29	30	55	214	53	41	
30	8.508 6326	8.509 3943	1.63242	2.3351	6.5946	
31	23	32	271	50	51	
32	19	21	300	49	57	
33	15	8.509 3910	329	47	62	
34	11	8.509 3898	357	46	67	
35	08	87	386	44	72	
36	04	76	415	43	77	
37	8.508 6300	65	444	42	82	
38	8.508 6296	53	473	40	88	
39	93	42	501	39	93	
40	8.508 6289	8.509 3831	1.63530	2.3337	6.5998	7.635
41	85	20	559	36	6.6003	
42	81	8.509 3808	588	35	08	
43	78	8.509 3797	617	33	14	
44	74	86	646	32	19	
45	70	75	674	30	24	
46	66	63	703	29	29	
47	63	52	732	28	34	
48	59	41	761	26	40	
49	55	30	790	25	45	
50	8.508 6251	8.509 3719	1.63819	2.3323	6.6050	
51	48	8.509 3708	848	22	55	
52	44	8.509 3696	877	20	61	
53	40	85	906	19	66	
54	36	74	935	17	71	
55	33	63	964	16	76	
56	29	52	1.63993	15	81	
57	25	40	1.64022	13	87	
58	22	29	051	12	92	
59	18	18	080	10	6.6097	
60	8.508 6214	8.509 3607	1.64109	2.3309	6.6102	7.627

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 60°.

Lat.	log A diff. $1'' = -0.06$	log B diff. $1'' = -0.12$	log C diff. $1'' = +0.49$	log D diff. $1'' = -0.08$	log E diff. $1'' = +0.09$	log F diff. $10'' = -3.7$
60 00	8.508 6214	8.509 3607	1.64109	2.3309	6.6102	7.627
1	10	8.509 3596	138	07	08	
2	07	85	167	06	13	
3	8.508 6203	73	196	04	18	
4	8.508 6199	62	225	03	23	
05	96	51	254	02	29	
6	92	40	283	2.3300	34	
7	88	29	312	2.3299	39	
8	84	18	341	97	44	
9	81	8.509 3507	370	96	50	
10	8.508 6177	8.509 3495	1.64400	2.3294	6.6155	
11	73	84	429	93	60	
12	70	73	458	91	66	
13	66	62	487	90	71	
14	62	51	516	88	76	
15	58	40	545	87	81	
16	55	29	574	85	87	
17	51	18	604	84	92	
18	47	8.509 3407	633	82	6.6197	
19	44	8.509 3395	662	81	6.6203	
20	8.508 6140	8.509 3384	1.64691	2.3279	6.6208	7.620
21	36	73	720	78	13	
22	33	62	750	76	18	
23	29	51	779	75	24	
24	25	40	808	73	29	
25	21	29	838	72	34	
26	18	18	867	70	40	
27	14	8.509 3307	896	69	45	
28	10	8.509 3296	925	67	50	
29	07	85	955	66	56	
30	8.508 6103	8.509 3274	1.64984	2.3264	6.6261	
31	8.508 6099	63	1.65013	63	66	
32	96	52	043	61	72	
33	92	40	072	60	77	
34	88	29	101	58	82	
35	85	18	131	57	87	
36	81	8.509 3207	160	55	93	
37	77	8.509 3196	190	54	6.6298	
38	74	85	219	52	6.6304	
39	70	74	248	51	09	
40	8.508 6066	8.509 3163	1.65278	2.3249	6.6314	7.613
41	63	52	307	48	20	
42	59	41	337	46	25	
43	55	30	366	45	30	
44	52	19	396	43	36	
45	48	8.509 3108	425	41	41	
46	44	8.509 3097	455	40	46	
47	41	86	484	38	52	
48	37	75	514	37	57	
49	33	64	543	35	62	
50	8.508 6030	8.509 3053	1.65573	2.3234	6.6368	
51	26	42	602	32	73	
52	22	31	632	31	79	
53	19	20	661	29	84	
54	15	8.509 3010	691	28	89	
55	11	8.509 2999	721	26	6.6395	
56	08	88	750	24	6.6400	
57	04	77	780	23	06	
58	8.508 6000	66	809	21	11	
59	8.508 5997	55	839	20	16	
60	8.508 5993	8.509 2944	1.65869	2.3218	6.6422	7.605



TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 61°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.18	log C diff. 1" = +0.50	log D diff. 1" = -0.03	log E diff. 1" = +0.09	log F diff. 10" = -4.0
61 00	8.508 5993	8.509 2944	1.65869	2.3218	6.6422	7.605
1	89	33	898	17	27	
2	80	22	928	15	32	
3	82	11	958	13	38	
4	79	5.509 2900	1.65987	12	43	
05	75	8.509 2889	1.66017	10	48	
6	71	78	047	09	54	
7	68	67	076	07	59	
8	64	56	106	06	65	
9	60	46	136	04	70	
10	8.508 5957	8.509 2835	1.66166	2.3202	6.6476	
11	53	24	195	2.3201	81	
12	49	13	225	2.3199	87	
13	46	8.509 2802	255	98	92	
14	42	8.509 2791	285	96	6.6497	
15	39		315	94	6.6503	
16	35	69	344	93	08	
17	31	58	374	91	14	
18	28	48	404	90	19	
19	24	37	434	88	25	
20	8.508 5920	8.509 2726	1.66464	2.3186	6.6530	7.597
21	17	15	494	85	36	
22	13	8.509 2704	524	83	41	
23	10	8.509 2693	553	81	46	
24	06	83	583	80	52	
25	8.508 5902	72	613	78	57	
26	8.508 5899	61	643	77	63	
27	05	50	673	75	68	
28	92	39	703	73	74	
29	88	28	733	72	79	
30	8.508 5884	8.509 2618	1.66763	2.3170	6.6585	
31	81	8.509 2607	793	68	90	
32	77	8.509 2596	823	67	6.6596	
33	74	85	853	65	6.6601	
34	70	74	883	64	07	
35	66	64	913	32	12	
36	63	53	943	60	18	
37	59	42	1.66973	58	23	
38	56	31	1.67003	57	29	
39	52	20	033	55	34	
40	8.508 5848	8.509 2510	1.67063	2.3154	6.6640	7.589
41	45	8.509 2499	094	52	45	
42	41	88	124	50	51	
43	38	77	154	49	56	
44	34	67	184	47	62	
45	30	56	214	45	67	
46	27	45	244	44	73	
47	23	34	274	42	78	
48	20	24	305	40	84	
49	16	15	335	39	89	
50	8.508 5813	8.509 2402	1.67365	2.3137	6.6695	
51	09	8.509 2391	395	35	6.6700	
52	05	81	425	34	06	
53	8.508 5802	70	456	32	12	
54	8.508 5798	59	486	30	17	
55	95	49	516	29	23	
56	91	38	547	27	28	
57	88	27	577	25	34	
58	84	16	607	23	39	
59	80	8.509 2306	637	22	45	
60	8.508 5777	8.509 2295	1.67668	2.3120	6.6750	7.581

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 62°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.18	log C diff. 1" = +0.51	log D diff. 1" = -0.08	log E diff. 1" = +0.09	log F diff. 10" = -4.2
62 0	8.508 5777	8.509 2295	1.67668	2.3120	6.6750	7.561
1	73	84	698	18	56	
2	70	74	728	17	61	
3	66	63	759	15	67	
4	63	52	789	13	73	
05	59	42	820	12	78	
6	55	31	850	10	84	
7	52	20	880	08	89	
8	48	8.509 2210	911	06	6.6795	
9	45	8.509 2199	941	05	6.6801	
10	8.508 5741	8.509 2188	1.67972	2.3103	6.6806	
11	38	78	1.68002	01	12	
12	34	67	083	2.3100	17	
13	30	56	063	2.3098	23	
14	27	46	094	96	29	
15	24	35	124	94	34	
16	20	25	155	93	40	
17	16	14	185	91	45	
18	13	8.509 2103	216	89	51	
19	09	8.509 2093	246	87	57	
20	8.508 5706	8.509 2082	1.68277	2.3086	6.6862	7.573
21	8.508 5702	71	307	84	68	
22	8.508 5699	61	338	82	73	
23	95	50	369	80	79	
24	92	40	399	79	85	
25	88	29	430	77	90	
26	85	19	461	75	6.6896	
27	81	8.509 2008	491	74	6.6902	
28	78	8.509 1997	522	72	07	
29	74	87	553	70	13	
30	8.508 5671	8.509 1976	1.68583	2.3068	6.6919	
31	67	66	614	66	24	
32	64	55	645	65	30	
33	60	45	675	63	36	
34	56	34	706	61	41	
35	53	23	737	59	47	
36	49	13	768	58	53	
37	46	8.509 1902	799	56	58	
38	42	8.509 1892	829	54	64	
39	39	81	860	52	70	
40	8.508 5635	8.509 1871	1.68891	2.3050	6.6975	7.564
41	32	60	922	49	81	
42	28	50	953	47	87	
43	25	39	1.68984	45	92	
44	21	29	1.69014	43	6.6998	
45	18	18	045	42	6.7004	
46	14	8.509 1808	076	40	09	
47	11	8.509 1797	107	38	15	
48	07	87	138	36	21	
49	04	76	169	34	26	
50	8.508 5600	8.509 1766	1.69200	2.3033	6.7082	
51	8.508 5597	55	231	31	38	
52	93	45	262	29	44	
53	90	34	293	27	49	
54	86	24	324	25	55	
55	83	14	355	23	61	
56	80	8.509 1703	386	22	67	
57	76	8.509 1693	417	20	72	
58	73	82	448	18	78	
59	69	72	479	16	84	
60	8.508 5566	8.509 1661	1.69510	2.3014	6.7089	7.556

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 68°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.17	log C diff. 1" = +0.52	log D diff. 1" = -0.03	log E diff. 1" = +0.10	log F diff. 10' = 4.5
63 00	8.508 5866	8.509 1661	1.69510	2.3014	6.7089	7.566
1	62	51	541	13	6.7095	
2	59	40	572	11	6.7101	
3	55	30	603	09	07	
4	52	20	635	07	12	
05	48	8.509 1609	666	05	18	
6	45	8.509 1599	697	03	24	
7	41	88	728	02	30	
8	38	78	759	2.3000	35	
9	34	68	791	2.2998	41	
10	8.508 5831	8.509 1557	1.69822	2.2996	6.7147	
11	27	47	853	94	53	
12	24	36	884	92	59	
13	20	26	915	90	64	
14	17	16	947	89	70	
15	14	8.509 1505	1.69978	87	76	
16	10	8.509 1495	1.70009	85	82	
17	07	85	041	83	88	
18	03	74	072	81	93	
19	8.508 5800	64	103	79	6.7199	
20	8.508 5496	8.509 1454	1.70135	2.2977	6.7205	7.547
21	93	43	166	75	11	
22	89	33	197	74	17	
23	86	23	229	72	22	
24	83	12	260	70	28	
25	79	8.509 1402	292	68	34	
26	76	8.509 1392	323	66	40	
27	72	81	355	64	46	
28	69	71	386	62	51	
29	65	61	417	60	57	
30	8.508 5462	8.509 1350	1.70449	2.2958	6.7263	
31	58	40	480	57	69	
32	55	30	512	55	75	
33	52	19	544	53	81	
34	48	8.509 1309	575	51	86	
35	45	8.509 1299	607	49	92	
36	41	89	638	47	6.7298	
37	38	78	670	45	6.7304	
38	34	68	701	43	10	
39	31	58	733	41	16	
40	8.508 5428	8.509 1248	1.70765	2.2939	6.7322	7.538
41	24	37	796	37	28	
42	21	27	828	36	33	
43	17	17	860	34	39	
44	14	8.509 1207	891	32	45	
45	11	8.509 1196	923	30	51	
46	07	86	955	28	57	
47	04	76	1.70986	26	63	
48	8.508 5400	66	1.71018	24	69	
49	8.508 5397	55	050	22	75	
50	8.508 5394	8.509 1145	1.71082	2.2920	6.7381	
51	90	35	114	18	86	
52	87	25	145	16	92	
53	83	15	177	14	6.7398	
54	80	8.509 1104	209	12	6.7404	
55	77	8.509 1094	241	10	10	
56	73	84	273	08	16	
57	70	74	305	06	22	
58	66	64	337	04	28	
59	63	54	368	02	34	
60	8.508 5360	8.509 1043	1.71400	2.2901	6.7440	7.529

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 64°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.17	log C diff. 1" = +0.54	log D diff. 1" = -0.03	log E diff. 1" = +0.10	log F diff. 10" = -4.7
64 00	8.508 5360	8.509 1043	1.71400	2.2901	6.7440	7.529
1	56	33	432	2.2899	46	
2	53	23	464	97	52	
3	49	13	496	96	58	
4	46	8.509 1003	528	93	63	
05	43	8.509 0993	560	91	69	
6	39	82	592	89	75	
7	36	72	624	87	81	
8	33	62	656	85	87	
9	29	52	688	83	93	
10	8.508 5326	8.509 0942	1.71720	2.2881	6.7499	
11	22	32	752	79	6.7505	
12	19	22	785	77	11	
13	16	12	817	75	17	
14	12	8.509 0902	849	73	23	
15	09	8.509 0891	881	71	29	
16	06	81	913	69	35	
17	8.508 5302	71	945	67	41	
18	8.508 5299	61	1.71977	65	47	
19	96	51	1.72010	63	53	
20	8.508 5292	8.509 0841	1.72042	2.2861	6.7569	7.520
21	89	31	074	59	65	
22	85	21	106	57	71	
23	82	11	139	55	77	
24	79	8.509 0801	171	53	83	
25	75	8.509 0791	203	51	89	
26	72	81	235	49	6.7595	
27	69	71	268	47	6.7601	
28	65	61	300	45	07	
29	62	51	332	42	13	
30	8.508 5259	8.509 0741	1.72365	2.2840	6.7619	
31	55	31	397	38	25	
32	52	21	430	36	31	
33	49	11	462	34	37	
34	45	8.509 0701	495	32	43	
35	42	8.509 0691	527	30	49	
36	39	81	559	28	56	
37	35	71	592	26	62	
38	32	61	624	24	68	
39	29	51	657	22	74	
40	8.508 5225	8.509 0641	1.72689	2.2820	6.7680	7.511
41	22	31	722	18	86	
42	19	21	755	16	92	
43	15	11	787	14	6.7698	
44	12	8.509 0601	820	12	6.7704	
45	09	8.509 0591	852	10	10	
46	05	81	885	07	16	
47	8.508 5202	71	918	05	22	
48	8.508 5199	61	950	03	28	
49	95	51	1.72983	2.2801	35	
50	8.508 5192	8.509 0541	1.73016	2.2799	6.7741	
51	89	31	048	97	47	
52	86	21	081	95	53	
53	82	11	114	93	59	
54	79	8.509 0501	146	91	65	
55	76	8.509 0491	179	89	71	
56	72	82	212	87	77	
57	69	72	245	84	84	
58	66	62	278	82	90	
59	62	52	310	80	6.7796	
60	8.508 5139	8.509 0442	1.73343	2.2778	6.7802	7.501

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 66°.

Lat.	log A diff. 1" = -0.05	log B diff. 1" = -0.15	log C diff. 1" = +0.55	log D diff. 1" = -0.04	log E diff. 1" = +0.10	log F diff. 1" = -5.9
65 00	8.508 5159	8.509 0442	1.75843	2.2778	6.7802	7.501
1	56	82	376	76	08	
2	52	22	409	74	14	
3	49	12	442	72	20	
4	46	8.509 0402	475	70	27	
05	43	8.509 0398	508	68	33	
6	39	53	541	66	39	
7	36	78	574	63	45	
8	33	68	607	61	51	
9	30	58	640	59	57	
10	8.508 5128	8.509 0344	1.75873	2.2757	6.7864	
11	28	34	708	55	70	
12	20	24	739	53	76	
13	17	14	772	50	82	
14	13	8.509 0304	805	48	88	
15	10	8.509 0295	838	46	6.7895	
16	07	55	871	44	6.7901	
17	08	75	904	42	07	
18	8.508 5100	65	937	40	13	
19	8.508 5097	55	1.75970	38	19	
20	8.508 5094	8.509 0245	1.74004	2.2785	6.7926	7.491
21	90	36	057	33	22	
22	87	26	070	31	28	
23	84	16	103	29	34	
24	81	8.509 0206	136	27	41	
25	77	8.509 0197	170	24	57	
26	74	57	203	22	63	
27	71	77	236	20	69	
28	68	67	270	18	75	
29	64	57	303	16	82	
30	8.508 5061	8.509 0148	1.74336	2.2714	6.7968	
31	58	38	370	11	6.7994	
32	54	28	403	09	6.8001	
33	51	18	436	07	07	
34	48	8.509 0109	470	05	13	
35	45	8.509 0099	503	03	19	
36	41	89	537	2.2700	26	
37	38	80	570	2.2698	32	
38	35	70	604	96	38	
39	32	60	637	94	44	
40	8.508 5029	8.509 0051	1.74670	2.2692	6.8051	7.481
41	25	41	704	89	57	
42	22	31	738	87	63	
43	19	22	771	85	70	
44	16	12	805	83	76	
45	13	8.509 0002	838	80	82	
46	09	8.508 9993	872	78	89	
47	06	83	906	76	6.8095	
48	03	73	939	74	6.8101	
49	8.508 5000	64	1.74973	72	07	
50	8.508 4996	8.508 9954	1.75007	2.2669	6.8114	
51	93	44	040	67	20	
52	90	35	074	65	27	
53	87	25	108	63	33	
54	84	15	142	60	39	
55	80	8.508 9906	175	58	46	
56	77	8.508 9896	209	56	52	
57	74	87	243	53	58	
58	71	77	277	51	65	
59	68	67	311	49	71	
60	8.508 4964	8.508 9858	1.75344	2.2647	6.8177	7.471

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 66°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.16	log C diff. 1" = +0.57	log D diff. 1" = -0.04	log E diff. 1" = +0.11	log F diff. 10' = -5.3
66 00	8.508 4964	8.508 9858	1.75344	2.2647	6.8177	7.471
01	61	48	378	44	84	
02	58	39	412	42	90	
03	55	29	446	40	6.8196	
04	52	20	480	38	6.8203	
05	48	10	514	35	09	
06	45	8.508 9801	548	33	16	
07	42	8.508 9791	582	31	22	
08	39	82	616	28	28	
09	36	72	650	26	35	
10	8.508 4933	8.508 9762	1.75684	2.2624	6.8241	
11	29	53	718	22	48	
12	26	43	752	19	54	
13	23	34	786	17	61	
14	20	24	820	15	67	
15	17	14	854	12	73	
16	13	8.508 9705	889	10	80	
17	10	8.508 9696	923	08	86	
18	07	86	957	06	93	
19	04	77	1.75991	03	6.8299	
20	8.508 4901	8.508 9667	1.76025	2.2601	6.8306	7.461
21	8.508 4908	58	060	2.2598	12	
22	95	48	094	96	19	
23	91	39	128	94	25	
24	88	29	163	91	31	
25	85	20	197	89	38	
26	82	11	231	87	44	
27	79	8.508 9601	266	84	51	
28	76	8.508 9592	300	82	57	
29	73	82	334	80	64	
30	8.508 4869	8.508 9573	1.76369	2.2578	6.8370	
31	66	63	403	75	77	
32	63	54	438	73	83	
33	60	44	472	70	90	
34	57	35	507	68	6.8396	
35	54	25	541	66	6.8403	
36	50	16	576	63	09	
37	47	8.508 9507	610	61	16	
38	44	8.508 9497	645	59	22	
39	41	88	679	56	29	
40	8.508 4838	8.508 9478	1.76714	2.2554	6.8436	7.450
41	35	69	749	51	42	
42	32	60	783	49	49	
43	29	51	818	47	55	
44	26	41	853	44	62	
45	22	32	887	42	68	
46	19	23	922	39	75	
47	16	13	957	37	81	
48	13	8.508 9404	1.76991	35	88	
49	10	8.508 9395	1.77026	32	6.8496	
50	8.508 4807	8.508 9385	1.77061	2.2530	6.8501	
51	04	76	096	27	08	
52	8.508 4801	66	131	25	14	
53	8.508 4797	57	166	23	21	
54	94	48	200	20	27	
55	91	38	235	18	34	
56	88	29	270	15	41	
57	85	20	305	13	47	
58	82	10	340	11	54	
59	79	8.508 9301	375	08	60	
60	8.508 4776	8.508 9292	1.77410	2.2506	6.8567	7.440

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 67°.

Lat.	log A diff. 1" = -0.05	log B diff. 1" = -0.15	log C diff. 1" = +0.59	log D diff. 1" = -0.04	log E diff. 1" = +0.11	log F diff. 10" = -5.6
67 00	8.508 4776	8.508 9292	1.77410	2.2506	6.8567	7.440
1	78	83	445	08	74	
2	70	73	480	2.2501	80	
3	66	64	515	2.2498	87	
4	63	55	550	96	6.8594	
05	60	46	585	93	6.8600	
6	57	36	620	91	07	
7	54	27	656	89	14	
8	51	18	691	86	20	
9	48	8.508 9208	726	84	27	
10	8.508 4745	8.508 9199	1.77761	2.2481	6.8634	
11	42	90	796	79	40	
12	39	81	831	76	47	
13	36	72	867	74	54	
14	33	62	902	71	60	
15	30	53	937	69	67	
16	26	44	1.77978	66	74	
17	23	35	1.78008	64	80	
18	20	26	048	61	87	
19	17	16	079	59	6.8694	
20	8.508 4714	8.508 9107	1.78114	2.2456	6.8700	7.429
21	11	8.508 9098	149	54	07	
22	08	89	185	51	14	
23	05	80	220	49	20	
24	8.508 4702	71	256	46	27	
25	8.508 4699	62	291	44	34	
26	96	52	327	41	41	
27	93	43	362	39	47	
28	90	34	398	36	54	
29	87	25	433	34	61	
30	8.508 4684	8.508 9016	1.78469	2.2431	6.8768	
31	81	8.508 9007	505	29	74	
32	78	8.508 8998	540	26	81	
33	75	88	576	24	88	
34	72	79	612	21	6.8795	
35	68	70	647	19	6.8802	
36	65	61	683	16	08	
37	62	52	719	14	15	
38	59	43	755	11	22	
39	56	34	790	09	29	
40	8.508 4653	8.508 8925	1.78826	2.2406	6.8835	7.418
41	50	16	862	03	42	
42	47	8.508 8907	898	2.2401	49	
43	44	8.508 8898	934	2.2398	56	
44	41	89	1.78970	96	63	
45	38	80	1.79006	93	70	
46	35	71	042	91	76	
47	32	62	078	88	83	
48	29	53	114	86	90	
49	26	44	150	83	6.8897	
50	8.508 4623	8.508 8834	1.79186	2.2380	6.8904	
51	20	25	222	78	10	
52	17	16	258	75	17	
53	14	8.508 8807	294	73	24	
54	11	8.508 8798	330	70	31	
55	08	89	366	67	38	
56	05	80	402	65	45	
57	8.508 4602	71	438	62	52	
58	8.508 4590	62	474	60	59	
59	96	54	511	57	65	
60	8.508 4593	8.508 8745	1.79547	2.2354	6.8972	7.406

TABLE 22.—(Geodetic position computations—Continued.)

LATITUDE 68°.

Lat.	log A		log B		log C		log D		log E		log F	
	diff. 1' = -0.05	diff. 1' = -0.15	diff. 1' = +0.62	diff. 1' = -0.4	diff. 1' = +0.12	diff. 10' = .5.9						
68 00	8.508 4593	8.508 8745	1.79547	2.2354	6.8972	7.406						
1	90	36	583	52	79							
2	87	27	620	49	86							
3	84	18	656	47	6.8993							
4	81	09	692	44	6.9000							
05	78	8.508 8700	728	41	07							
6	76	8.508 8691	765	39	14							
7	73	82	801	36	21							
8	70	73	838	33	28							
9	67	64	874	31	35							
10	8.508 4564	8.508 8656	1.79911	2.2328	6.9042							
11	61	47	947	26	48							
12	58	38	1.79984	23	55							
13	55	29	1.80020	20	62							
14	52	20	067	18	69							
15	49	11	093	15	76							
16	46	8.508 8602	130	12	83							
17	43	8.508 8593	166	10	90							
18	40	84	203	07	6.9097							
19	37	75	240	04	6.9104							
20	8.508 4534	8.508 8566	1.80276	2.2302	6.9111	7.396						
21	31	68	313	2.2299	18							
22	28	49	350	96	25							
23	25	40	387	94	32							
24	22	31	423	91	39							
25	19	22	460	88	46							
26	16	13	497	85	53							
27	13	8.508 8505	534	83	60							
28	10	8.508 8496	571	80	67							
29	07	87	608	77	74							
30	8.508 4504	8.508 8478	1.80645	2.2275	6.9181							
31	8.508 4501	69	682	72	88							
32	8.508 4499	60	719	69	6.9195							
33	96	52	756	67	6.9203							
34	93	43	793	64	10							
35	90	34	830	61	17							
36	87	25	867	58	24							
37	84	17	904	56	31							
38	81	8.508 8408	941	53	38							
39	78	8.508 8399	1.80978	50	45							
40	8.508 4475	8.508 8390	1.81015	2.2248	6.9252	7.383						
41	72	82	052	46	59							
42	70	73	089	42	66							
43	67	64	127	39	73							
44	64	56	164	36	80							
45	61	47	201	34	88							
46	58	38	239	31	6.9295							
47	55	30	276	28	6.9302							
48	52	21	313	26	09							
49	49	12	350	23	16							
50	8.508 4446	8.508 8303	1.81388	2.2220	6.9323							
51	43	8.508 8295	425	17	30							
52	40	86	463	14	37							
53	38	77	500	12	45							
54	35	68	538	09	52							
55	32	60	575	06	59							
56	29	51	613	03	66							
57	26	43	650	2.2201	73							
58	23	34	688	2.2198	80							
59	20	25	726	95	88							
60	8.508 4417	8.508 8217	1.81763	2.2192	6.9395	7.371						



TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 69°.

Lat.	log A diff. 1' = -0.05	log B diff. 1' = -0.14	log C diff. 1' = +0.64	log D diff. 1' = -0.05	log E diff. 1' = +0.12	log F diff. 10' = -6.2
69 00	8.508 4417	8.508 8217	1.81763	2.2192	6.9395	7.371
1	14	08	801	89	6.9402	
2	12	8.508 8200	838	87	09	
3	09	8.508 8191	876	84	16	
4	06	82	914	81	24	
05	03	74	952	78	31	
6	8.508 4400	65	1.81989	75	38	
7	8.508 4397	57	1.82027	72	45	
8	94	48	065	70	52	
9	92	39	103	67	60	
10	8.508 4389	8.508 8131	1.82141	2.2164	6.9467	
11	86	22	179	61	74	
12	83	14	217	58	82	
13	80	8.508 8105	255	55	89	
14	77	8.508 8096	293	53	6.9496	
15	74	88	330	50	6.9503	
16	71	79	369	47	11	
17	69	71	407	44	18	
18	66	62	445	41	25	
19	63	54	483	38	32	
20	8.508 4360	8.508 8045	1.82521	2.2136	6.9540	7.358
21	57	37	559	33	47	
22	55	28	597	30	54	
23	52	20	636	27	62	
24	49	11	674	24	69	
25	46	8.508 8003	712	21	76	
26	43	8.508 7994	750	18	84	
27	40	86	789	15	91	
28	37	77	827	12	6.9598	
29	35	69	865	10	6.9606	
30	8.508 4332	8.508 7960	1.82904	2.2107	6.9613	
31	29	52	942	04	20	
32	26	43	1.82981	2.2101	28	
33	23	35	1.83019	2.2098	35	
34	21	26	058	95	42	
35	18	18	096	92	50	
36	15	09	135	89	57	
37	12	8.508 7901	173	86	65	
38	09	8.508 7893	212	83	72	
39	06	84	250	80	79	
40	8.508 4304	8.508 7876	1.83289	2.2078	6.9687	7.346
41	8.508 4301	67	328	75	6.9694	
42	8.508 4298	59	366	72	6.9702	
43	95	51	405	69	09	
44	93	42	444	66	16	
45	90	34	483	63	24	
46	87	26	521	60	31	
47	84	17	560	57	39	
48	81	09	599	54	46	
49	79	8.508 7801	638	51	54	
50	8.508 4276	8.508 7792	1.83677	2.2048	6.9761	
51	73	84	716	45	69	
52	70	75	755	42	76	
53	67	67	794	39	84	
54	65	59	833	36	91	
55	62	50	872	33	6.9799	
56	59	42	911	30	6.9806	
57	56	34	950	27	14	
58	54	25	1.83989	24	21	
59	51	17	1.84028	21	29	
60	8.508 4248	8.508 7709	1.84068	2.2018	6.9836	7.335

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 70°.

Lat.	log A diff. 1''=-0.04	log B diff. 1''=-0.14	log C diff. 1''=+0.67	log D diff. 1''=-0.06	log E diff. 1''=+0.13	log F diff. 10'=-6.7
70 00	8.508 4248	8.508 7709	1.84068	2.2018	6.9836	7.333
1	45	8.508 7701	107	15	44	
2	43	8.508 7692	146	12	51	
3	40	84	185	09	59	
4	37	76	225	06	66	
05	34	68	264	03	74	
6	32	59	303	2.2000	81	
7	29	51	343	2.1997	89	
8	26	43	382	94	6.9896	
9	23	35	421	91	6.9904	
10	8.508 4221	8.508 7626	1.84461	2.1988	6.9912	
11	18	18	500	85	19	
12	15	10	540	82	27	
13	12	8.508 7602	579	79	34	
14	10	8.508 7594	619	76	42	
15	07	86	658	73	50	
16	04	78	698	70	57	
17	8.508 4201	69	738	66	65	
18	8.508 4199	61	778	63	73	
19	96	52	817	60	80	
20	8.508 4193	8.508 7544	1.84857	2.1957	6.9988	7.320
21	90	36	897	54	6.9995	
22	88	28	937	51	7.0003	
23	85	20	1.84976	48	11	
24	82	12	1.85016	45	18	
25	80	8.508 7504	056	42	26	
26	77	8.508 7495	096	39	34	
27	74	87	136	36	41	
28	71	79	176	33	49	
29	69	71	216	29	57	
30	8.508 4166	8.508 7462	1.85256	2.1926	7.0064	
31	63	54	296	23	72	
32	60	46	336	20	80	
33	58	38	376	17	88	
34	55	30	416	14	7.0096	
35	52	22	456	11	7.0103	
36	50	14	497	08	11	
37	47	8.508 7406	537	04	19	
38	44	8.508 7398	577	2.1901	26	
39	42	90	618	2.1898	34	
40	8.508 4139	8.508 7382	1.85658	2.1895	7.0142	7.307
41	36	74	698	92	50	
42	34	66	739	89	57	
43	31	58	779	85	65	
44	28	50	819	82	73	
45	26	42	860	79	81	
46	23	34	900	76	88	
47	20	26	941	73	7.0196	
48	18	18	1.85981	70	7.0204	
49	15	10	1.86022	66	12	
50	8.508 4112	8.508 7302	1.86063	2.1863	7.0220	
51	10	8.508 7294	103	60	27	
52	07	86	144	57	35	
53	04	77	185	54	43	
54	8.508 4101	69	225	50	51	
55	8.508 4099	61	266	47	59	
56	96	53	307	44	67	
57	93	45	348	41	75	
58	91	38	389	38	82	
59	88	30	430	34	90	
60	8.508 4096	8.508 7222	1.86470	2.1831	7.0298	7.293

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 71°.

Lat.	log A diff. 1" = -0.04	log B diff. 1" = -0.13	log C diff. 1" = +0.70	log D diff. 1" = -0.05	log E diff. 1" = +0.13	log F diff. 10" = 7.2
71 00	8.508 4086	8.508 7222	1.86470	2.1831	7.0298	7.293
1	83	14	511	28	7.6306	
2	80	8.508 7206	552	25	14	
3	78	8.508 7198	593	21	22	
4	75	90	634	18	30	
05	72	82	675	15	38	
6	70	74	717	12	46	
7	67	66	758	08	54	
8	64	58	799	05	62	
9	62	50	840	2.1802	70	
10	8.508 4059	8.508 7142	1.86881	2.1799	7.0378	
11	57	34	923	95	85	
12	54	27	1.86964	92	7.0393	
13	51	19	1.87005	89	7.0401	
14	49	11	046	86	09	
15	46	8.508 7103	088	82	17	
16	43	8.508 7095	129	79	25	
17	41	87	171	76	33	
18	38	79	212	72	41	
19	36	72	254	69	49	
20	8.508 4033	8.508 7064	1.87295	2.1766	7.0457	7.279
21	80	56	337	62	65	
22	28	48	378	59	73	
23	25	40	420	56	82	
24	23	33	462	52	90	
25	20	25	503	49	7.0498	
26	17	17	545	46	7.0506	
27	15	09	587	42	14	
28	12	8.508 7002	629	39	22	
29	10	8.508 6994	671	36	30	
30	8.508 4007	8.508 6996	1.87712	2.1732	7.0538	
31	05	78	754	29	46	
32	8.508 4002	71	796	26	54	
33	8.508 3999	63	838	22	62	
34	97	55	880	19	70	
35	94	47	922	16	79	
36	92	40	1.87964	12	87	
37	89	32	1.88006	09	7.0595	
38	86	24	049	06	7.0603	
39	84	16	091	2.1702	11	
40	8.508 3981	8.508 6908	1.88133	2.1699	7.0619	7.265
41	79	8.508 6901	175	95	27	
42	76	8.508 6893	217	92	36	
43	74	85	260	89	44	
44	71	78	302	85	52	
45	68	70	344	82	60	
46	66	62	387	78	68	
47	63	55	429	75	77	
48	61	47	472	72	85	
49	58	40	514	68	7.0693	
50	8.508 3956	8.508 6832	1.88557	2.1665	7.0701	
51	53	24	599	61	09	
52	51	17	642	58	18	
53	48	09	685	54	26	
54	46	8.508 6802	727	51	34	
55	43	8.508 6794	770	48	42	
56	41	86	813	44	51	
57	38	79	855	41	59	
58	36	71	898	37	67	
59	33	64	941	34	75	
60	8.508 3930	8.508 6756	1.88984	2.1630	7.0784	7.250

Table of values of  $\log \sec \frac{1}{2} (\Delta\phi)$ .

$\Delta\phi$	$\log \sec \frac{1}{2} (\Delta\phi)$	$\Delta\phi$	$\log \sec \frac{1}{2} (\Delta\phi)$	$\Delta\phi$	$\log \sec \frac{1}{2} (\Delta\phi)$	$\Delta\phi$	$\log \sec \frac{1}{2} (\Delta\phi)$	$\Delta\phi$	$\log \sec \frac{1}{2} (\Delta\phi)$
/	0.000 000	/	0.000 004	/	0.000 010	/	0.000 019	/	0.000 031
10	1	28	4	46	10	64	19	82	32
11	1	29	4	47	11	65	20	83	32
12	1	30	4	48	11	66	21	84	33
13	1	31	4	49	11	67	21	85	33
14	1	32	5	50	11	68	21	86	34
15	1	33	5	51	12	69	22	87	35
16	1	34	5	52	12	70	22	88	36
17	1	35	6	53	13	71	23	89	36
18	1	36	6	54	13	72	24	90	37
19	2	37	6	55	14	73	24	91	38
20	2	38	7	56	14	74	25	92	39
21	2	39	7	57	15	75	26	93	40
22	2	40	7	58	15	76	26	94	41
23	2	41	8	59	16	77	27	95	41
24	3	42	8	60	16	78	28	96	42
25	3	43	8	61	17	79	29	97	43
26	3	44	9	62	18	80	29	98	44
27	3	45	9	63	18	81	30	99	45

To convert:		To convert:	
Meters to feet.	Feet to meters.	Kilometers to statute miles.	Statute miles to kilometers.
1 = 3.280 833	1 = 0.304 8006	1 = 0.621 3699	1 = 1.609 347
2 = 6.561 667	2 = 0.609 6012	2 = 1.242 7399	2 = 3.218 694
3 = 9.842 500	3 = 0.914 4018	3 = 1.864 1098	3 = 4.828 042
4 = 13.123 333	4 = 1.219 2024	4 = 2.485 4798	4 = 6.437 389
5 = 16.404 166	5 = 1.524 0030	5 = 3.106 8497	5 = 8.046 736
6 = 19.685 000	6 = 1.828 8037	6 = 3.728 2196	6 = 9.656 083
7 = 22.965 833	7 = 2.133 6043	7 = 4.349 5896	7 = 11.265 430
8 = 26.246 666	8 = 2.438 4049	8 = 4.970 9595	8 = 12.874 778
9 = 29.527 500	9 = 2.743 2055	9 = 5.592 3295	9 = 14.484 125

Table of corrections to longitude for difference in arc and sine.

log s (-)	log dif- ference.	log Δλ (+)	log s (-)	log dif- ference.	log Δλ (+)	log s (-)	log dif- ference.	log Δλ (+)
3.876	0.000 0001	2.385	4.871	0.000 0098	3.380	5.172	0.000 0392	3.681
4.026	02	2.586	4.882	108	3.381	5.178	402	3.687
4.114	03	2.632	4.892	108	3.401	5.188	412	3.692
4.177	04	2.686	4.903	114	3.412	5.188	422	3.697
4.226	05	2.734	4.913	119	3.422	5.193	433	3.702
4.265	06	2.774	4.922	124	3.431	5.199	443	3.706
4.298	07	2.807	4.932	130	3.441	5.204	453	3.713
4.327	08	2.836	4.941	136	3.450	5.209	464	3.718
4.353	09	2.862	4.950	142	3.459	5.214	474	3.723
4.376	10	2.886	4.959	147	3.468	5.219	486	3.728
4.396	11	2.905	4.968	153	3.477	5.223	497	3.732
4.415	12	2.924	4.976	160	3.485	5.228	508	3.737
4.433	13	2.942	4.985	166	3.494	5.233	519	3.742
4.449	14	2.958	4.993	172	3.502	5.238	530	3.747
4.464	15	2.973	5.002	179	3.511	5.242	541	3.751
4.478	16	2.987	5.010	186	3.519	5.247	553	3.756
4.491	17	3.000	5.017	192	3.526	5.251	565	3.760
4.503	18	3.012	5.025	199	3.534	5.256	577	3.765
4.526	20	3.035	5.033	206	3.542	5.260	588	3.769
4.548	23	3.067	5.040	213	3.549	5.265	600	3.774
4.570	25	3.079	5.047	221	3.556	5.269	613	3.778
4.591	27	3.100	5.054	228	3.563	5.273	625	3.782
4.612	30	3.121	5.062	236	3.571	5.278	637	3.787
4.631	33	3.140	5.068	243	3.577	5.282	650	3.791
4.649	36	3.158	5.075	251	3.584	5.286	663	3.795
4.667	39	3.176	5.082	259	3.591	5.290	674	3.799
4.684	42	3.193	5.088	267	3.597	5.294	687	3.803
4.701	45	3.210	5.095	275	3.604	5.299	702	3.808
4.716	48	3.225	5.102	284	3.611	5.303	716	3.812
4.732	52	3.241	5.108	292	3.617	5.307	729	3.816
4.746	56	3.255	5.114	300	3.623	5.311	743	3.820
4.761	59	3.270	5.120	309	3.629	5.315	757	3.824
4.774	63	3.283	5.126	318	3.635	5.319	771	3.828
4.788	67	3.297	5.132	327	3.641	5.323	785	3.832
4.801	71	3.310	5.138	336	3.647	5.327	800	3.836
4.813	75	3.322	5.144	345	3.653	5.331	814	3.840
4.825	80	3.334	5.150	354	3.659	5.335	829	3.844
4.834	84	3.343	5.156	364	3.665	5.339	845	3.848
4.849	89	3.358	5.161	373	3.670	5.343	861	3.852
4.860	94	3.369	5.167	383	3.676	5.347	877	3.856

## INVERSE SOLUTION.

HAVING LATITUDES AND LONGITUDES OF TWO POINTS TO COMPUTE AZIMUTHS AND DISTANCES.

The following example shows the method of performing the operation. The northernmost point should be used as the initial position, then all signs for (I), (II), and (III) are +, and for (IV) -. The value of  $\Delta\lambda$  may be either + or -, but this sign need only be used in determining in which quadrant the azimuth angle  $\alpha$  falls, i. e., the sign of  $\tan \alpha$  (12). An inspection of a rough plat of the positions will also determine this. The correction to  $\Delta\lambda$  is found from a distance scaled off from the plat, and need not be very close. In (8) the term  $(I+II)^2$  is the square of the difference of latitude  $\Delta\phi$  in seconds. Since (IV) is always small, log (I) in (8) may be taken as log of  $\Delta\phi$  from (1). If  $\cos \alpha$  is smaller than  $\sin \alpha$ , find  $s$  from  $\log s \cos \alpha$  in (11). As a check on the work compute the second

position, using distance and azimuth found as above. The order of solution is shown by figures in parentheses. The cosines of latitudes are proportional to the intercepted parallels.

Latitude =  $\phi = 38^{\circ} 23' 27'' .00$  Given.

$\phi' = 37^{\circ} 45' 09'' .30$  Given.

$\Delta \phi = 38' 17'' .70$

$= 2297'' .70$  (1)

$\log \Delta \phi = 3.3612933$

$\log C = 1.30360$

$\log S^2 \sin^2 \alpha = 8.75770$

$\log$  (II)  $0.06130$  (7)

(II)  $= 1'' .152$

$\log D = 2.3812$

$\log (I + II)^2 = 6.7226$

$\log$  (III)  $9.1088$  (8)

III  $= 0'' .13$

$\log E = 6.0711$

$\log S^2 \sin^2 \alpha = 8.7577$

$\log I = 3.3613$

$\log IV = 8.1901$  (9)

IV  $= -'' .02$

(II)  $= + 1.15''$

(III)  $= + 0.13$

IV  $= - .02$

Sum  $= + 1.26''$  (10)

$\Delta \phi = 2297.70$

(I)  $= 2296.44$

Longitude =  $\lambda = 104^{\circ} 32' 48'' .20$  Given

$\lambda' = 104^{\circ} 49' 05'' .50$  Given

$\Delta \lambda = 16' 17'' .30 +$

$= 977'' .30 +$  (2)

$\log \Delta \lambda = 2.9900279$

$\log \Delta \lambda$  correction  $= + 16$

$\log S$  (scaled distance) correction  $= .99$

(apply with opposite sign)  $= 83$  (3)

$\log \Delta \lambda' = 2.9900362$  (4)

$\log \lambda' = 8.5091750$  (5)

$\sec \phi' = 0.1020092$

$8.6111842$  (+)

$\log \Delta \lambda' = 2.9900362$  (+)

$\log S \sin \alpha = 4.3788520$  (+) (6)

$\log S \cos \alpha = 4.8500742$  (+) (11)

$\frac{\sin \alpha}{\cos \alpha}$

$= \tan \alpha = 9.5287778$  (12)

$\log$  (I)  $= 3.3610475$

$\log$  (E)  $= 8.5109733$

$\log S \cos \alpha = 4.8500742$  (11)

Azimuth  $\alpha = 18^{\circ} 40' 10'' .8$  (13)

$\log S \sin \alpha = 4.3788520$

$\log \sin \alpha = 9.5053013$

$\log$  distance  $= \log S = 4.8735507$  (14)

TABLE 23 — *Log m*, for use in computing spherical excess.

[Computed for the Clarke spheroid of 1866.]

Lat.	Log m.	Lat.	Log m.	Lat.	Log m.
° /		° /		° /	
0 00	1.40695	25 00	1.40590	50 00	1.40349
0 30	1.40695	25 30	1.40586	50 30	1.40344
1 00	1.40695	26 00	1.40582	51 00	1.40339
1 30	1.40694	26 30	1.40578	51 30	1.40334
2 00	1.40694	27 00	1.40573	52 00	1.40329
2 30	1.40694	27 30	1.40569	52 30	1.40324
3 00	1.40693	28 00	1.40565	53 00	1.40319
3 30	1.40693	28 30	1.40560	53 30	1.40314
4 00	1.40692	29 00	1.40556	54 00	1.40309
4 30	1.40691	29 30	1.40552	54 30	1.40304
5 00	1.40690	30 00	1.40548	55 00	1.40299
5 30	1.40689	30 30	1.40544	55 30	1.40295
6 00	1.40688	31 00	1.40539	56 00	1.40290
6 30	1.40687	31 30	1.40534	56 30	1.40285
7 00	1.40686	32 00	1.40530	57 00	1.40280
7 30	1.40685	32 30	1.40525	57 30	1.40276
8 00	1.40683	33 00	1.40520	58 00	1.40271
8 30	1.40682	33 30	1.40516	58 30	1.40266
9 00	1.40680	34 00	1.40511	59 00	1.40262
9 30	1.40679	34 30	1.40506	59 30	1.40257
10 00	1.40677	35 00	1.40501	60 00	1.40253
10 30	1.40675	35 30	1.40496	60 30	1.40249
11 00	1.40673	36 00	1.40491	61 00	1.40244
11 30	1.40671	36 30	1.40486	61 30	1.40240
12 00	1.40669	37 00	1.40482	62 00	1.40235
12 30	1.40667	37 30	1.40477	62 30	1.40231
13 00	1.40665	38 00	1.40472	63 00	1.40227
13 30	1.40663	38 30	1.40467	63 30	1.40223
14 00	1.40660	39 00	1.40462	64 00	1.40219
14 30	1.40658	39 30	1.40457	64 30	1.40215
15 00	1.40655	40 00	1.40452	65 00	1.40210
15 30	1.40653	40 30	1.40446	65 30	1.40207
16 00	1.40650	41 00	1.40441	66 00	1.40203
16 30	1.40647	41 30	1.40436	66 30	1.40199
17 00	1.40644	42 00	1.40431	67 00	1.40195
17 30	1.40642	42 30	1.40426	67 30	1.40192
18 00	1.40639	43 00	1.40421	68 00	1.40188
18 30	1.40636	43 30	1.40416	68 30	1.40185
19 00	1.40632	44 00	1.40411	69 00	1.40181
19 30	1.40629	44 30	1.40406	69 30	1.40178
20 00	1.40626	45 00	1.40400	70 00	1.40174
20 30	1.40623	45 30	1.40395	70 30	1.40171
21 00	1.40619	46 00	1.40390	71 00	1.40168
21 30	1.40616	46 30	1.40385	71 30	1.40164
22 00	1.40612	47 00	1.40380	72 00	1.40161
22 30	1.40608	47 30	1.40375		
23 00	1.40605	48 00	1.40369		
23 30	1.40601	48 30	1.40364		
24 00	1.40597	49 00	1.40359		
24 30	1.40594	49 30	1.40354		

## APPROXIMATE SPHERICAL EXCESS.

This may be obtained by dividing the area of the triangle in square miles by 75.5.

TABLE 24.—Mean refraction.

Apparent altitude.	Refraction.	Apparent altitude.	Refraction.	Apparent altitude.	Refraction.	Apparent altitude.	Refraction.	Apparent altitude.	Refraction.
° ' "	' "	° ' "	' "	° ' "	' "	° ' "	' "	° ' "	' "
0 0	34 54.1	7 0	7 19.7	14 0	3 47.4	28 0	1 48.2	42	64.0
10	32 49.2	10	7 10.5	20	3 42.1	20	1 46.7	43	61.8
20	30 52.3	20	7 1.7	40	3 37.0	40	1 45.3	44	59.7
30	29 3.5	30	6 53.3	15 0	3 32.1	29 0	1 43.8	45	57.7
40	27 22.7	40	6 45.1	20	3 27.4	20	1 42.4	46	55.7
50	25 49.8	50	6 37.2	40	3 22.9	40	1 41.0	47	53.8
1 0	24 24.6	8 0	6 29.6	16 0	3 18.6	30 0	1 39.7	48	51.9
10	23 6.7	10	6 22.3	20	3 14.5	20	1 38.4	49	50.2
20	21 55.6	20	6 15.2	40	3 10.5	40	1 37.1	50	48.4
30	20 50.9	30	6 8.4	17 0	3 6.6	31 0	1 35.8	51	46.7
40	19 51.9	40	6 1.8	20	3 2.9	20	1 34.5	52	45.1
50	18 58.0	50	5 55.4	40	2 59.3	40	1 33.3	53	43.5
2 0	18 8.6	9 0	5 49.3	18 0	2 55.8	32 0	1 32.1	54	41.9
10	17 23.0	10	5 43.3	20	2 52.5	20	1 30.9	55	40.4
20	16 40.7	20	5 37.6	40	2 49.3	40	1 29.8	56	38.9
30	16 0.9	30	5 32.0	19 0	2 46.1	33 0	1 28.7	57	37.5
40	15 23.4	40	5 26.5	20	2 43.1	20	1 27.6	58	36.1
50	14 47.8	50	5 21.3	40	2 40.2	40	1 26.5	59	34.7
3 0	14 14.6	10 0	5 16.2	20 0	2 37.3	34 0	1 25.4	60	33.3
10	13 43.7	10	5 11.2	20	2 34.5	20	1 24.3	61	32.0
20	13 15.0	20	5 6.4	40	2 31.9	40	1 23.3	62	30.7
30	12 48.3	30	5 1.7	21 0	2 29.3	35 0	1 22.3	63	29.4
40	12 23.7	40	4 57.2	20	2 26.8	20	1 21.3	64	28.2
50	12 0.7	50	4 52.8	40	2 24.3	40	1 20.3	65	26.9
4 0	11 38.9	11 0	4 48.5	22 0	2 21.9	36 0	1 19.3	66	25.7
10	11 18.3	2	4 44.3	20	2 19.6	20	1 18.3	67	24.5
20	10 58.6	20	4 40.2	40	2 17.4	40	1 17.4	68	23.3
30	10 39.6	30	4 36.3	23 0	2 15.2	37 0	1 16.5	69	22.2
40	10 21.2	40	4 32.4	20	2 13.0	20	1 15.6	70	21.0
50	10 3.3	50	4 28.7	40	2 10.9	40	1 14.7	71	19.9
5 0	9 46.5	12 0	4 25.0	24 0	2 8.9	38 0	1 13.8	72	18.8
10	9 30.9	10	4 21.4	20	2 7.0	20	1 12.9	73	17.7
20	9 16.0	20	4 18.0	40	2 5.1	40	1 12.0	74	16.6
30	9 1.9	30	4 14.6	25 0	2 3.2	39 0	1 11.2	75	15.5
40	8 48.4	40	4 11.3	20	2 1.4	20	1 10.3	76	14.5
50	8 35.6	50	4 8.1	40	1 59.6	40	1 9.5	77	13.4
6 0	8 23.3	13 0	4 4.9	26 0	1 57.8	40 0	1 8.7	78	12.3
10	8 11.6	10	4 1.8	20	1 56.1	20	1 7.9	79	11.2
20	8 0.3	20	3 58.8	40	1 54.4	40	1 7.1	80	10.2
30	7 49.5	30	3 55.9	27 0	1 52.8	41 0	1 6.3	81	9.1
40	7 39.2	40	3 53.0	20	1 51.2	20	1 5.5	82	8.1
50	7 29.2	50	3 50.2	40	1 49.7	40	1 4.7	86	4.1
7 0	7 19.7	14 0	3 47.4	28 0	1 48.2	42 0	1 4.0	90	0.0



TABLE 25.—*Corrections for curvature and refraction, in feet=0.574 (distance, miles)<sup>2</sup>.*

[Difference in feet between the apparent and true level at distances varying from 1 to 66 miles.]

Distance, miles.	Difference in feet for—			Distance, miles.	Difference in feet for—		
	Curvature.	Refraction.	Curvature and refraction.		Curvature.	Refraction.	Curvature and refraction.
1	0.7	0.1	0.6	34	771.3	108.0	663.3
2	2.7	0.4	2.3	35	817.4	114.4	703.0
3	6.0	0.8	5.2	36	864.8	121.1	743.7
4	10.7	1.5	9.2	37	913.5	127.9	785.6
5	16.7	2.3	14.4	38	963.5	134.9	828.6
6	24.0	3.4	20.6	39	1,014.9	142.1	872.8
7	32.7	4.6	28.1	40	1,067.6	149.5	918.1
8	42.7	6.0	36.7	41	1,121.7	157.0	964.7
9	54.0	7.6	46.4	42	1,177.0	164.8	1,012.2
10	66.7	9.3	57.4	43	1,233.7	172.7	1,061.0
11	80.7	11.3	69.4	44	1,291.8	180.8	1,111.0
12	96.1	13.4	82.7	45	1,351.2	189.2	1,162.0
13	112.8	15.8	97.0	46	1,411.9	197.7	1,214.2
14	130.8	18.3	112.5	47	1,474.0	206.3	1,267.7
15	150.1	21.0	129.1	48	1,537.3	215.2	1,322.1
16	170.8	23.9	146.9	49	1,602.0	224.3	1,377.7
17	192.8	27.0	165.8	50	1,668.1	233.5	1,434.6
18	216.2	30.3	185.9	51	1,735.5	243.0	1,492.5
19	240.9	33.7	207.2	52	1,804.2	252.6	1,551.6
20	266.9	37.4	229.5	53	1,874.3	262.4	1,611.9
21	294.3	41.2	253.1	54	1,945.7	272.4	1,673.3
22	322.9	45.2	277.7	55	2,018.4	282.6	1,735.8
23	353.0	49.4	303.6	56	2,092.5	292.9	1,799.6
24	384.3	53.8	330.5	57	2,167.9	303.5	1,864.4
25	417.0	58.4	358.6	58	2,244.6	314.2	1,930.4
26	451.1	63.1	388.0	59	2,322.7	325.2	1,997.5
27	486.4	68.1	418.3	60	2,402.1	336.3	2,065.8
28	523.1	73.2	449.9	61	2,482.8	347.6	2,135.2
29	561.2	78.6	482.6	62	2,564.9	359.1	2,205.8
30	600.5	84.1	516.4	63	2,648.3	370.8	2,277.5
31	641.2	89.8	551.4	64	2,733.0	382.6	2,350.4
32	683.3	95.7	587.6	65	2,819.1	394.7	2,424.4
33	726.6	101.7	624.9	66	2,906.5	406.9	2,499.6

TABLE 26.—FOR OBTAINING DIFFERENCES OF ALTITUDE FOR ANY MINUTE UP TO 15 DEGREES, AND FOR ANY DISTANCE.

[Prepared by Arthur P. Davis.]

## EXPLANATION OF TABLE.

The left-hand column is the minutes of the vertical angle, the degrees being denoted by the large number at top of page. The bold-face figures at top of column is the distance in miles. Numbers in the body of the table denote the difference of elevation corresponding to the angle on the left and the distance at top. The correction for curvature, refraction, and height of instrument is always plus; it therefore increases the difference of level for angles of elevation, and is subtracted from the difference of level for angles of depression.

*Example.*—Required the difference of altitude corresponding to a vertical angle of  $+ 9^{\circ} 18'$  at a distance of 3.628 miles. On page 253 the tabular number corresponding to  $9^{\circ} 18'$  and—

	Feet.
A distance of 3 miles is .....	2, 594
For a distance of 6 miles is 5,188—for 0.6 is therefore .....	519
For a distance of 2 miles is 1,729—for 0.02 is therefore .....	17
For a distance of 8 miles is 6,917—for 0.008 is therefore .....	7
Correction for curvature, refraction, and height of instrument for 3.6 miles is +.	12
Total difference of altitude .....	+ 3, 149

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

0°.

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
1	1.5	3.1	5	6	8	9	11	12	14	1.6	6	10.2	64
2	3.1	6.1	9	12	15	18	22	25	28	3.1	7	10.3	65
3	4.6	9.2	14	18	23	28	32	37	41	4.6	8	10.4	67
4	6.1	12.3	18	25	31	37	43	49	55	6.1	9	10.5	68
5	7.7	15.4	23	31	38	46	54	61	69	7.7	10	10.6	69
6	9.2	18.4	28	37	46	55	65	74	83	9.2	11	10.7	70
7	10.8	21.5	32	43	54	65	75	86	97	10.8	12	10.8	71
8	12.3	24.6	37	49	61	74	86	98	111	12.3	13	10.9	73
9	13.8	27.6	41	55	69	83	97	111	124	13.8	14	11.0	74
10	15.4	30.7	46	61	77	92	108	123	138	15.4	15	11.1	75
11	16.9	33.8	51	68	84	101	118	135	152	16.9	16	11.2	77
12	18.4	36.9	55	74	92	111	129	147	166	18.4	17	11.3	78
13	20.0	39.9	60	80	100	120	140	160	180	20.0	18	11.4	79
14	21.5	43.0	65	86	108	129	151	172	194	21.5	19	11.5	80
15	23.0	46.1	69	92	115	138	161	184	207	23.0	20	11.6	82
16	24.6	49.1	74	98	123	147	172	197	221	24.6	21	11.7	83
17	26.1	52.2	78	104	131	157	183	209	235	26.1	22	11.8	84
18	27.6	55.3	83	111	138	166	194	221	249	27.6	23	11.9	86
19	29.2	58.4	88	117	146	175	204	233	263	29.2	24	12.0	87
20	30.7	61.4	92	123	154	184	215	246	276	30.7	25	12.1	89
21	32.3	64.5	97	129	161	194	226	258	290	32.3	26	12.2	90
22	33.8	67.6	101	135	169	203	237	270	304	33.8	27	12.3	91
23	35.3	70.7	106	141	177	212	247	283	318	35.3	28	12.4	93
24	36.9	73.7	111	147	184	221	258	295	332	36.9	29	12.5	94
25	38.4	76.8	115	154	192	230	269	307	346	38.4	30	12.6	96
26	39.9	79.9	120	160	200	240	280	319	359	39.9	31	12.7	97
27	41.5	82.9	124	166	207	249	290	332	373	41.5	32	12.8	99
28	43.0	86.0	129	172	215	258	301	344	387	43.0	33	12.9	100
29	44.5	89.1	134	178	223	267	312	356	401	44.5	34	13.0	102
30	46.1	92.2	138	184	230	276	323	369	415	46.1	35	13.1	103
31	47.6	95.2	143	190	238	286	333	381	429	47.6	36	13.2	105
32	49.2	98.3	147	197	246	295	341	393	442	49.2	37	13.3	106
33	50.7	101.4	152	203	253	304	355	405	456	50.7	38	13.4	108
34	52.2	104.4	157	209	261	313	366	418	470	52.2	39	13.5	109
35	53.8	107.5	161	215	269	323	376	430	484	53.8	40	13.6	111
36	55.3	110.6	166	221	276	332	387	442	498	55.3	41	13.7	112
37	56.8	113.7	170	227	284	341	398	456	512	56.8	42	13.8	114
38	58.4	116.7	175	233	292	350	409	467	525	58.4	43	13.9	115
39	59.9	119.8	180	240	300	359	419	479	539	59.9	44	14.0	117
40	61.4	122.9	184	246	307	369	430	492	553	61.4	45	14.1	119
41	63.0	125.9	189	252	315	378	441	504	567	63.0	46	14.2	120
42	64.5	129.0	194	258	323	387	452	516	581	64.5	47	14.3	122
43	66.0	132.1	198	264	330	396	462	528	594	66.0	48	14.4	124
44	67.6	135.2	203	270	338	405	473	541	608	67.6	49	14.5	125
45	69.1	138.2	207	276	346	415	484	553	622	69.1	50	14.6	127
46	70.6	141.3	212	283	353	424	495	565	636	70.6	51	14.7	129
47	72.2	144.4	217	289	361	433	505	578	650	72.2	52	14.8	130
48	73.7	147.5	221	295	369	442	516	590	664	73.7	53	14.9	132
49	75.3	150.5	226	301	376	452	527	602	677	75.3	54	15.0	134
50	76.8	153.6	230	307	384	461	538	614	691	76.8	55	15.1	135
51	78.3	156.7	235	313	392	470	548	627	705	78.3	56	15.2	137
52	79.9	159.7	240	319	399	479	559	639	719	79.9	57	15.3	139
53	81.4	162.8	244	326	407	488	570	651	733	81.4	58	15.4	141
54	82.9	165.9	249	332	415	498	581	664	747	82.9	59	15.5	142
55	84.5	169.0	253	338	422	507	591	676	760	84.5	60	15.6	144
56	86.0	172.0	258	344	430	516	602	688	774	86.0	61	15.7	146
57	87.5	175.1	263	350	438	525	613	700	788	87.5	62	15.8	148
58	89.1	178.2	267	356	445	535	624	713	802	89.1	63	15.9	150
59	90.6	181.3	272	363	453	544	634	725	816	90.6	64	16.0	151
60	92.2	184.3	276	369	461	553	645	737	829	92.2			

<sup>a</sup>For all distances under 1.6 miles the correction may be taken as +5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

1°.

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
0	92.2	184.3	276	369	461	553	645	737	829	16.1	153	22.1	285
1	93.7	187.4	281	375	468	562	656	750	843	16.2	155	22.2	287
2	95.2	190.5	286	381	476	571	667	762	857	16.3	157	22.3	290
3	96.8	193.5	290	387	484	581	677	774	871	16.4	159	22.4	293
4	98.3	196.6	295	393	492	590	688	786	885	16.5	161	22.5	295
5	99.8	199.7	300	399	499	599	699	799	899	16.6	163	22.6	298
6	101.4	202.8	304	406	507	608	710	811	912	16.7	165	22.7	300
7	102.9	205.8	309	412	515	618	720	823	926	16.8	167	22.8	303
8	104.4	208.9	313	418	522	627	731	836	940	16.9	168	22.9	306
9	106.0	212.0	318	424	530	636	742	848	954	17.0	170	23.0	308
10	107.5	215.1	323	430	538	645	753	860	968	17.1	172	23.1	311
11	109.1	218.1	327	436	545	654	763	873	982	17.2	174	23.2	313
12	110.6	221.2	332	442	553	664	774	885	995	17.3	176	23.3	316
13	112.1	224.3	336	449	561	673	785	897	1,009	17.4	178	23.4	319
14	113.7	227.3	341	456	568	682	796	909	1,023	17.5	180	23.5	321
15	115.2	230.4	346	461	576	691	806	922	1,037	17.6	182	23.6	324
16	116.7	233.5	350	467	584	700	817	934	1,051	17.7	184	23.7	327
17	118.3	236.6	355	473	591	710	828	946	1,065	17.8	186	23.8	330
18	119.8	239.6	359	479	599	719	839	959	1,078	17.9	188	23.9	332
19	121.4	242.7	364	486	607	728	849	971	1,092	18.0	190	24.0	335
20	122.9	245.8	369	492	614	737	860	983	1,106	18.1	193	24.1	338
21	124.4	248.9	373	498	622	747	871	995	1,120	18.2	195	24.2	341
22	126.0	251.9	378	504	630	756	882	1,008	1,134	18.3	197	24.3	343
23	127.5	255.0	383	510	638	765	893	1,020	1,148	18.4	199	24.4	346
24	129.0	258.1	387	516	645	774	903	1,032	1,161	18.5	201	24.5	349
25	130.6	261.2	392	522	653	783	914	1,045	1,175	18.6	203	24.6	352
26	132.1	264.2	396	528	661	793	925	1,057	1,189	18.7	205	24.7	355
27	133.6	267.3	401	535	668	802	936	1,069	1,203	18.8	207	24.8	358
28	135.2	270.4	406	541	676	811	946	1,082	1,217	18.9	210	24.9	360
29	136.7	273.5	410	547	684	820	957	1,094	1,231	19.0	212	25.0	363
30	138.3	276.5	415	553	691	830	968	1,106	1,244	19.1	214	25.1	366
31	139.8	279.6	419	559	699	839	979	1,118	1,258	19.2	216	25.2	369
32	141.3	282.7	424	565	707	848	989	1,131	1,272	19.3	218	25.3	372
33	142.9	285.7	429	571	714	857	1,000	1,143	1,286	19.4	221	25.4	375
34	144.4	288.8	433	578	722	866	1,011	1,155	1,300	19.5	223	25.5	378
35	146.0	291.9	438	584	730	876	1,022	1,168	1,314	19.6	225	25.6	381
36	147.5	295.0	442	590	737	885	1,032	1,180	1,327	19.7	227	25.7	384
37	149.0	298.0	447	596	745	894	1,043	1,192	1,341	19.8	230	25.8	387
38	150.6	301.1	452	602	753	903	1,054	1,204	1,355	19.9	232	25.9	390
39	152.1	304.2	456	608	760	913	1,065	1,217	1,369	20.0	234	26.0	393
40	153.6	307.3	461	615	768	922	1,075	1,229	1,383	20.1	236	26.2	399
41	155.2	310.3	466	621	776	931	1,086	1,241	1,397	20.2	239	26.4	406
42	156.7	313.4	470	627	784	940	1,097	1,254	1,410	20.3	241	26.6	411
43	158.2	316.5	475	633	791	949	1,108	1,266	1,424	20.4	243	26.8	417
44	159.8	319.6	479	639	799	959	1,118	1,278	1,438	20.5	246	27.0	423
45	161.3	322.6	484	645	807	968	1,129	1,291	1,452	20.6	248	27.2	429
46	162.9	325.7	489	651	814	977	1,140	1,303	1,466	20.7	250	27.4	435
47	164.4	328.8	493	658	822	986	1,151	1,315	1,480	20.8	253	27.6	442
48	165.9	331.9	498	664	830	996	1,162	1,327	1,493	20.9	255	27.8	448
49	167.5	334.9	502	670	837	1,005	1,172	1,340	1,507	21.0	258	28.0	455
50	169.0	338.0	507	676	845	1,014	1,183	1,352	1,521	21.1	260	28.2	461
51	170.6	341.1	512	682	853	1,023	1,194	1,364	1,535	21.2	262	28.4	467
52	172.1	344.2	516	688	860	1,032	1,205	1,377	1,549	21.3	265	28.6	474
53	173.6	347.2	521	694	868	1,042	1,215	1,389	1,563	21.4	267	28.8	480
54	175.2	350.3	525	701	876	1,051	1,226	1,401	1,576	21.5	270	29.0	487
55	176.7	353.4	530	707	883	1,060	1,237	1,414	1,590	21.6	272	29.2	494
56	178.2	356.5	535	713	891	1,069	1,248	1,426	1,604	21.7	275	29.4	501
57	179.8	359.5	539	719	899	1,079	1,258	1,438	1,618	21.8	277	29.6	507
58	181.3	362.6	544	725	907	1,088	1,269	1,450	1,632	21.9	280	29.8	514
59	182.8	365.7	549	731	914	1,097	1,280	1,465	1,646	22.0	282	30.0	521
60	184.4	368.8	553	738	922	1,106	1,291	1,475	1,659				

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as +5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

90.

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
0	184.4	368.8	553	738	922	1,106	1,291	1,475	1,659				
1	185.9	371.8	558	744	930	1,116	1,301	1,487	1,673	1.6	6	10.2	64
2	187.5	374.9	562	750	937	1,125	1,312	1,500	1,687	2.1	7	10.3	65
3	189.0	378.0	567	756	945	1,134	1,323	1,512	1,701	2.5	8	10.4	67
4	190.5	381.1	572	762	953	1,143	1,334	1,524	1,715	2.8	9	10.5	68
5	192.1	384.1	576	768	960	1,152	1,344	1,537	1,729	3.1	10	10.6	69
6	193.6	387.2	581	774	968	1,162	1,355	1,549	1,742	3.4	11	10.7	70
7	195.1	390.3	585	781	976	1,171	1,366	1,561	1,756	3.6	12	10.8	71
8	196.7	393.4	590	787	983	1,180	1,377	1,573	1,770	3.8	13	10.9	73
9	198.2	396.4	595	793	991	1,189	1,388	1,586	1,784				
10	199.8	399.5	599	799	999	1,199	1,398	1,598	1,798	4.1	14	11.0	74
11	201.3	402.6	604	805	1,006	1,208	1,409	1,610	1,812	4.3	15	11.1	75
12	202.8	405.7	609	811	1,014	1,217	1,420	1,623	1,826	4.5	16	11.2	77
13	204.4	408.8	613	818	1,022	1,226	1,431	1,635	1,839	4.7	17	11.3	78
14	205.9	411.8	618	824	1,030	1,235	1,441	1,647	1,853	4.8	18	11.4	79
15	207.5	414.9	622	830	1,037	1,245	1,452	1,660	1,867	5.0	19	11.5	80
16	209.0	418.0	627	836	1,045	1,254	1,463	1,672	1,881	5.2	20	11.6	82
17	210.5	421.1	632	842	1,053	1,263	1,474	1,684	1,895	5.4	21	11.7	83
18	212.1	424.1	636	848	1,060	1,272	1,484	1,697	1,909	5.5	22	11.8	84
19	213.6	427.2	641	854	1,068	1,282	1,495	1,709	1,923	5.7	23	11.9	86
20	215.1	430.3	645	861	1,076	1,291	1,506	1,721	1,936	5.8	24	12.0	87
21	216.7	433.4	650	867	1,083	1,300	1,517	1,733	1,950	6.0	25	12.1	89
22	218.2	436.4	655	873	1,091	1,309	1,528	1,746	1,964	6.1	26	12.2	90
23	219.8	439.5	659	879	1,099	1,319	1,538	1,758	1,978	6.3	27	12.3	91
24	221.3	442.6	664	885	1,106	1,328	1,549	1,770	1,992	6.4	28	12.4	93
25	222.8	445.7	669	891	1,114	1,337	1,560	1,783	2,006	6.5	29	12.5	94
26	224.4	448.7	673	897	1,122	1,346	1,571	1,795	2,019	6.7	30	12.6	96
27	225.9	451.8	678	904	1,130	1,355	1,581	1,807	2,033	6.8	31	12.7	97
28	227.5	454.9	682	910	1,137	1,365	1,592	1,820	2,047	6.9	32	12.8	99
29	229.0	458.0	687	916	1,145	1,374	1,603	1,832	2,061	7.0	33	12.9	100
30	230.5	461.1	692	922	1,153	1,383	1,614	1,844	2,075	7.2	34	13.0	102
31	232.1	464.1	696	928	1,160	1,392	1,624	1,857	2,089	7.3	35	13.1	103
32	233.6	467.2	701	934	1,168	1,402	1,635	1,869	2,102	7.4	36	13.2	105
33	235.1	470.3	705	941	1,176	1,411	1,646	1,881	2,116	7.5	37	13.3	106
34	236.7	473.4	711	947	1,183	1,420	1,657	1,893	2,130	7.6	38	13.4	108
35	238.2	476.4	715	953	1,191	1,429	1,668	1,906	2,144	7.8	39	13.5	109
36	239.8	479.5	719	959	1,199	1,439	1,678	1,918	2,158	7.9	40	13.6	111
37	241.3	482.6	724	965	1,207	1,448	1,689	1,930	2,172	8.0	41	13.7	112
38	242.8	485.7	729	971	1,214	1,457	1,700	1,943	2,186	8.1	42	13.8	114
39	244.4	488.8	733	978	1,222	1,466	1,711	1,955	2,199	8.2	43	13.9	115
40	245.9	491.8	738	984	1,230	1,476	1,721	1,967	2,213	8.3	44	14.0	117
41	247.5	494.9	742	990	1,237	1,485	1,732	1,980	2,227	8.4	45	14.1	119
42	249.0	497.0	747	996	1,245	1,494	1,743	1,992	2,241	8.5	46	14.2	120
43	250.5	501.1	752	1,002	1,253	1,503	1,754	2,004	2,255	8.6	47	14.3	122
44	252.1	504.2	756	1,008	1,260	1,512	1,765	2,017	2,269	8.7	48	14.4	124
45	253.6	507.2	761	1,014	1,268	1,521	1,775	2,029	2,283	8.8	49	14.5	125
46	255.2	510.3	765	1,021	1,276	1,531	1,786	2,041	2,296	8.9	50	14.6	127
47	256.7	513.4	770	1,027	1,283	1,540	1,797	2,054	2,310	9.0	51	14.7	129
48	258.2	516.5	775	1,033	1,291	1,549	1,808	2,066	2,324	9.1	52	14.8	130
49	259.8	519.5	779	1,039	1,299	1,559	1,818	2,078	2,338	9.2	53	14.9	132
50	261.3	522.6	784	1,045	1,307	1,568	1,829	2,091	2,352	9.3	54	15.0	134
51	262.9	525.7	789	1,051	1,314	1,577	1,840	2,103	2,366	9.4	55	15.1	135
52	264.4	528.8	793	1,058	1,322	1,586	1,851	2,115	2,380	9.5	56	15.2	137
53	265.9	531.9	798	1,064	1,330	1,596	1,862	2,127	2,393	9.6	58	15.3	139
54	267.5	534.9	802	1,070	1,337	1,605	1,872	2,140	2,407	9.7	59	15.4	141
55	269.0	538.0	807	1,076	1,345	1,614	1,883	2,152	2,421	9.8	60	15.5	142
56	270.6	541.1	812	1,082	1,353	1,623	1,894	2,164	2,435	9.9	61	15.6	144
57	272.1	544.2	816	1,088	1,360	1,633	1,905	2,177	2,449	10.0	62	15.7	146
58	273.6	547.3	821	1,095	1,368	1,642	1,915	2,189	2,463	10.1	63	15.8	148
59	275.2	550.3	826	1,101	1,376	1,651	1,926	2,201	2,477			15.9	150
60	276.7	553.4	830	1,107	1,384	1,660	1,937	2,214	2,490			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as +5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

3°.

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction, and height of instrument. <sup>a</sup>		
										Miles.	Fect.	
0	276.7	553.4	830	1,107	1,384	1,660	1,937	2,214	2,490	10.1	63	
1	278.3	556.5	835	1,113	1,391	1,670	1,948	2,226	2,504	10.1	63	
2	279.8	559.6	839	1,119	1,399	1,679	1,959	2,238	2,518	10.2	64	
3	281.3	562.7	844	1,125	1,407	1,688	1,969	2,251	2,532	10.3	65	
4	282.9	565.7	849	1,131	1,414	1,697	1,980	2,263	2,546	10.4	67	
5	284.4	568.8	853	1,138	1,422	1,706	1,991	2,275	2,560	10.5	68	
6	286.0	571.9	858	1,144	1,430	1,716	2,002	2,288	2,574	10.6	69	
7	287.5	575.0	862	1,150	1,437	1,725	2,012	2,300	2,587	10.7	70	
8	289.0	578.1	867	1,156	1,445	1,734	2,023	2,312	2,601	10.8	71	
9	290.6	581.2	872	1,162	1,453	1,743	2,034	2,325	2,615	10.9	73	
10	292.1	584.2	876	1,168	1,461	1,753	2,045	2,337	2,629	11.0	75	
11	293.7	587.3	881	1,175	1,468	1,762	2,056	2,349	2,643	11.2	77	
12	295.2	590.4	886	1,181	1,476	1,771	2,066	2,362	2,657	11.4	79	
13	296.7	593.5	890	1,187	1,484	1,780	2,077	2,373	2,671	11.6	82	
14	298.3	596.6	895	1,193	1,491	1,790	2,088	2,386	2,685	11.8	84	
15	299.8	599.6	899	1,199	1,499	1,799	2,099	2,399	2,698	12.0	87	
16	301.4	602.7	904	1,205	1,507	1,808	2,110	2,411	2,712	12.2	90	
17	302.9	605.8	909	1,212	1,515	1,817	2,120	2,423	2,726	12.4	93	
18	304.4	608.9	913	1,218	1,522	1,827	2,131	2,436	2,740	12.6	96	
19	306.0	612.0	918	1,224	1,530	1,836	2,142	2,448	2,754	12.8	99	
20	307.5	615.0	923	1,230	1,538	1,845	2,153	2,460	2,768	13.0	102	
21	309.1	618.1	927	1,236	1,545	1,854	2,163	2,473	2,782	13.2	105	
22	310.6	621.2	932	1,242	1,553	1,864	2,174	2,485	2,795	13.4	108	
23	312.1	624.3	936	1,249	1,561	1,873	2,185	2,497	2,809	13.6	111	
24	313.7	627.4	941	1,255	1,568	1,882	2,196	2,510	2,823	13.8	114	
25	315.2	630.5	946	1,261	1,576	1,891	2,207	2,522	2,837	14.0	117	
26	316.8	633.5	950	1,267	1,584	1,901	2,217	2,534	2,851	14.2	120	
27	318.3	636.6	955	1,273	1,592	1,910	2,228	2,547	2,865	14.4	124	
28	319.9	639.7	960	1,279	1,599	1,919	2,240	2,559	2,879	14.6	127	
29	321.4	642.7	964	1,286	1,607	1,928	2,250	2,571	2,893	14.8	130	
30	322.9	645.9	969	1,292	1,615	1,938	2,261	2,584	2,906	15.0	132	
31	324.5	649.0	973	1,298	1,622	1,947	2,271	2,596	2,920	15.2	137	
32	326.0	652.0	978	1,304	1,630	1,956	2,282	2,608	2,934	15.4	141	
33	327.6	655.1	983	1,310	1,638	1,965	2,293	2,621	2,948	15.6	144	
34	329.1	658.2	987	1,316	1,646	1,975	2,304	2,633	2,962	15.8	148	
35	330.6	661.3	992	1,323	1,653	1,984	2,315	2,645	2,976	16.0	151	
36	332.2	664.4	997	1,329	1,661	1,993	2,325	2,658	2,990	16.2	153	
37	333.7	667.5	1,001	1,335	1,669	2,002	2,336	2,670	3,004	16.4	159	
38	335.3	670.5	1,006	1,341	1,676	2,012	2,347	2,682	3,017	16.6	163	
39	336.8	673.6	1,010	1,347	1,684	2,021	2,358	2,695	3,031	16.8	167	
40	338.4	676.7	1,015	1,353	1,692	2,030	2,369	2,707	3,045	17.0	170	
41	339.9	679.8	1,020	1,360	1,700	2,039	2,379	2,719	3,059	17.2	174	
42	341.4	682.9	1,024	1,366	1,707	2,049	2,390	2,732	3,073	17.4	178	
43	343.0	686.0	1,029	1,372	1,715	2,058	2,401	2,744	3,087	17.6	182	
44	344.5	689.1	1,034	1,378	1,723	2,067	2,412	2,756	3,101	17.8	186	
45	346.1	692.1	1,038	1,384	1,730	2,076	2,422	2,769	3,115	18.0	190	
46	347.6	695.2	1,043	1,390	1,738	2,086	2,433	2,781	3,129	18.2	195	
47	349.2	698.3	1,047	1,397	1,746	2,095	2,444	2,793	3,142	18.4	199	
48	350.7	701.4	1,052	1,403	1,753	2,104	2,455	2,806	3,156	18.6	203	
49	352.2	704.5	1,057	1,409	1,761	2,113	2,466	2,818	3,170	18.8	207	
50	353.8	707.6	1,061	1,415	1,769	2,123	2,476	2,830	3,184	19.0	212	
51	355.3	710.7	1,066	1,421	1,777	2,132	2,487	2,843	3,198	19.2	216	
52	356.9	713.7	1,071	1,427	1,784	2,141	2,498	2,855	3,212	19.4	221	
53	358.4	716.8	1,075	1,434	1,792	2,150	2,509	2,867	3,226	19.6	225	
54	360.0	719.9	1,080	1,440	1,800	2,160	2,520	2,880	3,240	19.8	230	
55	361.5	723.0	1,085	1,446	1,807	2,169	2,530	2,892	3,253	20.0	234	
56	363.0	726.1	1,089	1,452	1,815	2,178	2,541	2,904	3,267	21.0	258	
57	364.6	729.2	1,094	1,458	1,823	2,188	2,552	2,917	3,281	22.0	282	
58	366.1	732.3	1,098	1,465	1,831	2,197	2,563	2,929	3,295	23.0	308	
59	367.7	735.3	1,103	1,471	1,838	2,206	2,574	2,941	3,309	24.0	335	
60	369.2	738.4	1,108	1,477	1,846	2,215	2,584	2,954	3,323	25.0	363	

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as +5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

4°

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument, <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
0	369.2	738	1,108	1,477	1,846	2,215	2,584	2,954	3,323				
1	370.8	742	1,112	1,483	1,854	2,225	2,595	2,966	3,337	1.6	6	10.2	64
2	372.3	745	1,117	1,489	1,862	2,234	2,606	2,978	3,351	2.1	7	10.3	65
3	373.8	748	1,122	1,496	1,869	2,243	2,617	2,991	3,365	2.5	8	10.4	67
4	375.4	751	1,126	1,502	1,877	2,252	2,628	3,003	3,378	2.8	9	10.5	68
5	376.9	754	1,131	1,508	1,885	2,262	2,639	3,015	3,392	3.1	10	10.6	69
6	378.5	757	1,135	1,514	1,892	2,271	2,649	3,028	3,406	3.4	11	10.7	70
7	380.0	760	1,140	1,520	1,900	2,280	2,660	3,040	3,420	3.6	12	10.8	71
8	381.6	763	1,145	1,526	1,908	2,289	2,671	3,053	3,434	3.8	13	10.9	73
9	383.1	766	1,149	1,532	1,916	2,299	2,682	3,065	3,448				
10	384.7	769	1,154	1,539	1,923	2,308	2,693	3,077	3,462	4.1	14	11.0	74
11	386.2	772	1,159	1,545	1,931	2,317	2,703	3,090	3,476	4.3	15	11.1	75
12	387.7	775	1,163	1,551	1,939	2,326	2,714	3,102	3,490	4.5	16	11.2	77
13	389.3	779	1,168	1,557	1,946	2,336	2,725	3,114	3,504	4.7	17	11.3	78
14	390.8	782	1,172	1,563	1,954	2,345	2,736	3,127	3,517	4.8	18	11.4	79
15	392.4	785	1,177	1,569	1,962	2,354	2,747	3,139	3,531	5.0	19	11.5	80
16	393.9	788	1,182	1,576	1,970	2,363	2,757	3,151	3,545	5.2	20	11.6	82
17	395.5	791	1,186	1,582	1,977	2,373	2,768	3,164	3,559	5.4	21	11.7	83
18	397.0	794	1,191	1,588	1,985	2,382	2,779	3,176	3,573	5.5	22	11.8	84
19	398.6	797	1,196	1,594	1,993	2,391	2,790	3,188	3,587	5.7	23	11.9	86
20	400.1	800	1,200	1,600	2,000	2,401	2,801	3,201	3,601	5.8	24	12.0	87
21	401.6	803	1,205	1,607	2,008	2,410	2,811	3,213	3,615	6.0	25	12.1	89
22	403.2	806	1,210	1,613	2,016	2,419	2,822	3,225	3,629	6.1	26	12.2	90
23	404.7	809	1,214	1,619	2,024	2,428	2,833	3,238	3,643	6.3	27	12.3	91
24	406.3	813	1,219	1,625	2,031	2,438	2,844	3,250	3,656	6.4	28	12.4	93
25	407.8	816	1,223	1,631	2,039	2,447	2,855	3,263	3,670	6.5	29	12.5	94
26	409.4	819	1,228	1,637	2,047	2,456	2,866	3,275	3,684	6.7	30	12.6	96
27	410.9	822	1,233	1,644	2,055	2,465	2,876	3,287	3,698	6.8	31	12.7	97
28	412.5	825	1,237	1,650	2,062	2,475	2,887	3,300	3,712	6.9	32	12.8	99
29	414.0	828	1,242	1,656	2,070	2,484	2,898	3,312	3,726	7.0	33	12.9	100
30	415.5	831	1,247	1,662	2,078	2,493	2,909	3,324	3,740	7.2	34	13.0	102
31	417.1	834	1,251	1,668	2,085	2,503	2,920	3,337	3,754	7.3	35	13.1	103
32	418.6	837	1,256	1,675	2,093	2,512	2,930	3,349	3,768	7.4	36	13.2	105
33	420.2	840	1,261	1,681	2,101	2,521	2,941	3,361	3,782	7.5	37	13.3	106
34	421.7	843	1,265	1,687	2,109	2,530	2,952	3,374	3,796	7.6	38	13.4	108
35	423.3	847	1,270	1,693	2,116	2,540	2,963	3,386	3,809	7.8	39	13.5	109
36	424.8	850	1,274	1,699	2,124	2,549	2,974	3,399	3,823	7.9	40	13.6	111
37	426.4	853	1,279	1,705	2,132	2,558	2,985	3,411	3,837	8.0	41	13.7	112
38	427.9	856	1,284	1,712	2,140	2,567	2,995	3,423	3,851	8.1	42	13.8	114
39	429.5	859	1,288	1,718	2,147	2,577	3,006	3,436	3,865	8.2	43	13.9	115
40	431.0	862	1,293	1,724	2,155	2,586	3,017	3,448	3,879	8.3	44	14.0	117
41	432.5	865	1,298	1,730	2,163	2,595	3,028	3,460	3,893	8.4	45	14.1	119
42	434.1	868	1,302	1,736	2,170	2,605	3,039	3,473	3,907	8.5	46	14.2	120
43	435.6	871	1,307	1,743	2,178	2,614	3,049	3,485	3,921	8.6	47	14.3	122
44	437.2	874	1,312	1,749	2,186	2,623	3,060	3,498	3,935	8.7	48	14.4	124
45	438.7	877	1,316	1,755	2,194	2,632	3,071	3,510	3,949	8.8	49	14.5	125
46	440.3	881	1,321	1,761	2,201	2,642	3,082	3,522	3,963	8.9	50	14.6	127
47	441.8	884	1,325	1,767	2,209	2,651	3,093	3,535	3,976	9.0	51	14.7	129
48	443.4	887	1,330	1,773	2,217	2,660	3,104	3,547	3,990	9.1	52	14.8	130
49	444.9	890	1,335	1,780	2,225	2,669	3,113	3,558	4,003	9.2	53	14.9	132
50	446.5	893	1,339	1,786	2,232	2,679	3,125	3,572	4,018	9.3	54	15.0	134
51	448.0	896	1,344	1,792	2,240	2,688	3,136	3,584	4,032	9.4	55	15.1	135
52	449.6	899	1,349	1,798	2,248	2,697	3,147	3,596	4,046	9.5	56	15.2	137
53	451.1	902	1,353	1,804	2,256	2,707	3,158	3,609	4,060	9.6	58	15.3	139
54	452.7	905	1,358	1,811	2,263	2,716	3,169	3,621	4,074	9.7	59	15.4	141
55	454.2	908	1,363	1,817	2,271	2,725	3,179	3,634	4,088	9.8	60	15.5	142
56	455.8	912	1,367	1,823	2,279	2,735	3,190	3,646	4,102	9.9	61	15.6	144
57	457.3	915	1,372	1,829	2,286	2,744	3,201	3,658	4,116	10.0	62	15.7	146
58	458.8	918	1,377	1,835	2,294	2,753	3,212	3,671	4,130	10.1	63	15.8	148
59	460.4	921	1,381	1,842	2,302	2,762	3,223	3,683	4,144			15.9	150
60	461.9	924	1,386	1,848	2,310	2,772	3,234	3,696	4,157			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

5°

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
0	461.9	924	1,386	1,848	2,310	2,772	3,234	3,696	4,157				
1	463.5	927	1,390	1,854	2,317	2,781	3,244	3,708	4,171				
2	465.0	930	1,395	1,860	2,325	2,790	3,255	3,720	4,185	1.6	6	10.2	64
3	466.6	933	1,400	1,866	2,333	2,800	3,266	3,733	4,199	2.1	7	10.3	65
4	468.1	936	1,405	1,873	2,341	2,809	3,277	3,745	4,213	2.5	8	10.4	67
5	469.7	939	1,409	1,879	2,348	2,818	3,288	3,757	4,227	2.8	9	10.5	68
6	471.2	942	1,414	1,885	2,356	2,827	3,299	3,770	4,241	3.1	10	10.6	69
7	472.8	946	1,419	1,891	2,364	2,837	3,309	3,782	4,255	3.4	11	10.7	70
8	474.3	949	1,423	1,897	2,372	2,846	3,320	3,795	4,269	3.6	12	10.8	71
9	475.9	952	1,428	1,904	2,379	2,855	3,331	3,807	4,283	3.8	13	10.9	73
10	477.4	955	1,432	1,910	2,387	2,865	3,342	3,819	4,297	4.1	14	11.0	74
11	479.0	958	1,437	1,916	2,395	2,874	3,353	3,832	4,311	4.3	15	11.1	75
12	480.5	961	1,442	1,922	2,403	2,883	3,361	3,844	4,325	4.5	16	11.2	77
13	482.1	964	1,447	1,928	2,410	2,892	3,375	3,857	4,339	4.7	17	11.3	78
14	483.6	967	1,451	1,935	2,418	2,902	3,385	3,869	4,353	4.8	18	11.4	79
15	485.2	970	1,456	1,941	2,426	2,911	3,396	3,881	4,367	5.0	19	11.5	80
16	486.7	973	1,461	1,947	2,434	2,920	3,407	3,894	4,381	5.2	20	11.6	82
17	488.3	976	1,465	1,953	2,441	2,930	3,418	3,906	4,394	5.4	21	11.7	83
18	489.8	980	1,470	1,959	2,449	2,939	3,429	3,919	4,408	5.5	22	11.8	84
19	491.3	983	1,475	1,966	2,457	2,948	3,440	3,931	4,422	5.7	23	11.9	86
20	492.9	986	1,479	1,972	2,465	2,958	3,450	3,943	4,436	5.8	24	12.0	87
21	494.5	989	1,483	1,978	2,472	2,967	3,461	3,956	4,450	6.0	25	12.1	89
22	496.0	992	1,488	1,984	2,480	2,976	3,472	3,968	4,464	6.1	26	12.2	90
23	497.6	995	1,493	1,990	2,488	2,985	3,483	3,981	4,478	6.3	27	12.3	91
24	499.1	998	1,498	1,996	2,496	2,995	3,494	3,993	4,492	6.4	28	12.4	93
25	500.7	1,001	1,502	2,003	2,503	3,004	3,505	4,005	4,506	6.5	29	12.5	94
26	502.2	1,004	1,507	2,009	2,511	3,013	3,515	4,018	4,520	6.7	30	12.6	96
27	503.8	1,007	1,512	2,015	2,519	3,023	3,526	4,030	4,534	6.8	31	12.7	97
28	505.3	1,010	1,516	2,021	2,527	3,032	3,537	4,042	4,548	6.9	32	12.8	99
29	506.9	1,014	1,521	2,027	2,534	3,041	3,548	4,055	4,562	7.0	33	12.9	100
30	508.4	1,017	1,525	2,034	2,542	3,050	3,559	4,067	4,576	7.2	34	13.0	102
31	510.0	1,020	1,530	2,040	2,550	3,060	3,570	4,080	4,590	7.3	35	13.1	103
32	511.5	1,023	1,535	2,046	2,558	3,069	3,581	4,092	4,604	7.4	36	13.2	105
33	513.0	1,026	1,539	2,052	2,565	3,078	3,591	4,105	4,618	7.5	37	13.3	106
34	514.6	1,029	1,544	2,058	2,573	3,088	3,602	4,117	4,632	7.6	38	13.4	108
35	516.2	1,032	1,549	2,065	2,581	3,097	3,613	4,129	4,645	7.8	39	13.5	109
36	517.7	1,035	1,553	2,071	2,589	3,106	3,624	4,142	4,659	7.9	40	13.6	111
37	519.3	1,039	1,558	2,077	2,596	3,116	3,635	4,154	4,673	8.0	41	13.7	112
38	520.8	1,042	1,563	2,083	2,604	3,125	3,646	4,167	4,687	8.1	42	13.8	114
39	522.4	1,045	1,568	2,089	2,612	3,134	3,657	4,179	4,701	8.2	43	13.9	115
40	523.9	1,048	1,572	2,095	2,620	3,144	3,667	4,191	4,715	8.3	44	14.0	117
41	525.5	1,051	1,576	2,102	2,627	3,153	3,678	4,204	4,729	8.4	45	14.1	119
42	527.0	1,054	1,581	2,108	2,635	3,162	3,689	4,216	4,743	8.5	46	14.2	120
43	528.6	1,057	1,586	2,114	2,643	3,172	3,700	4,229	4,757	8.6	47	14.3	122
44	530.1	1,060	1,591	2,121	2,651	3,181	3,711	4,241	4,771	8.7	48	14.4	124
45	531.7	1,063	1,595	2,127	2,658	3,190	3,722	4,253	4,785	8.8	49	14.5	125
46	533.2	1,066	1,600	2,133	2,666	3,199	3,733	4,266	4,799	8.9	50	14.6	127
47	534.8	1,070	1,605	2,139	2,674	3,209	3,743	4,278	4,813	9.0	51	14.7	129
48	536.3	1,073	1,609	2,145	2,682	3,218	3,754	4,291	4,827	9.1	52	14.8	130
49	537.9	1,076	1,614	2,154	2,689	3,227	3,765	4,303	4,841	9.2	53	14.9	132
50	539.4	1,079	1,618	2,158	2,697	3,237	3,776	4,315	4,855	9.3	54	15.0	134
51	541.0	1,082	1,623	2,166	2,705	3,246	3,787	4,328	4,869	9.4	55	15.1	135
52	542.5	1,085	1,628	2,170	2,713	3,255	3,798	4,340	4,883	9.5	56	15.2	137
53	544.1	1,088	1,632	2,176	2,721	3,265	3,809	4,353	4,897	9.6	58	15.3	139
54	545.6	1,091	1,637	2,183	2,728	3,274	3,819	4,365	4,911	9.7	59	15.4	141
55	547.2	1,094	1,642	2,189	2,736	3,283	3,830	4,378	4,925	9.8	60	15.5	142
56	548.7	1,097	1,646	2,195	2,743	3,292	3,841	4,390	4,939	9.9	61	15.6	144
57	550.3	1,101	1,651	2,201	2,752	3,302	3,852	4,402	4,953	10.0	62	15.7	146
58	551.8	1,104	1,656	2,207	2,759	3,311	3,863	4,415	4,967	10.1	63	15.8	148
59	553.4	1,107	1,661	2,214	2,767	3,320	3,874	4,427	4,981			15.9	150
60	555.0	1,110	1,665	2,220	2,775	3,330	3,885	4,440	4,995			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.



TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

6°

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction and height of instrument, <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
0	555.0	1,110	1,665	2,220	2,775	3,330	3,885	4,440	4,995				
1	556.5	1,113	1,670	2,226	2,783	3,339	3,896	4,452	5,009	1.6	6	10.2	64
2	558.1	1,116	1,674	2,232	2,790	3,348	3,906	4,464	5,023	1.7	7	10.3	65
3	559.6	1,119	1,679	2,238	2,798	3,358	3,917	4,477	5,037	2.1	8	10.4	67
4	561.2	1,122	1,684	2,245	2,806	3,367	3,928	4,489	5,050	2.5	8	10.5	68
5	562.7	1,125	1,688	2,251	2,814	3,376	3,939	4,502	5,064	2.8	9	10.6	69
6	564.3	1,129	1,693	2,257	2,821	3,386	3,950	4,514	5,078	3.1	10	10.7	70
7	565.8	1,132	1,697	2,263	2,829	3,395	3,961	4,527	5,092	3.4	11	10.8	71
8	567.4	1,135	1,702	2,270	2,837	3,404	3,972	4,539	5,106	3.6	12	10.9	73
9	568.9	1,138	1,707	2,276	2,845	3,414	3,983	4,551	5,120	3.8	13		
10	570.5	1,141	1,711	2,282	2,852	3,423	3,993	4,564	5,134	4.1	14	11.0	74
11	572.0	1,144	1,716	2,288	2,860	3,432	4,004	4,576	5,148	4.3	15	11.1	75
12	573.6	1,147	1,721	2,294	2,868	3,442	4,015	4,589	5,162	4.5	16	11.2	77
13	575.2	1,150	1,725	2,301	2,876	3,451	4,026	4,601	5,176	4.7	17	11.3	78
14	576.7	1,153	1,730	2,307	2,884	3,460	4,037	4,614	5,190	4.8	18	11.4	79
15	578.3	1,157	1,735	2,313	2,891	3,470	4,048	4,626	5,204	5.0	19	11.5	80
16	579.8	1,160	1,739	2,319	2,899	3,479	4,059	4,639	5,218	5.2	20	11.6	82
17	581.4	1,163	1,744	2,325	2,907	3,488	4,070	4,651	5,232	5.4	21	11.7	83
18	582.9	1,166	1,749	2,332	2,915	3,498	4,080	4,663	5,246	5.5	22	11.8	84
19	584.5	1,169	1,753	2,338	2,922	3,507	4,091	4,676	5,260	5.7	23	11.9	86
20	586.0	1,172	1,758	2,344	2,930	3,516	4,102	4,688	5,274	5.8	24	12.0	87
21	587.6	1,175	1,763	2,350	2,938	3,526	4,113	4,701	5,288	6.0	25	12.1	89
22	589.1	1,178	1,767	2,357	2,946	3,535	4,124	4,713	5,302	6.1	26	12.2	90
23	590.7	1,181	1,772	2,363	2,953	3,544	4,135	4,726	5,316	6.3	27	12.3	91
24	592.2	1,185	1,777	2,369	2,961	3,554	4,146	4,738	5,330	6.4	28	12.4	93
25	593.8	1,188	1,781	2,375	2,969	3,563	4,157	4,750	5,344	6.5	29	12.5	94
26	595.4	1,191	1,786	2,381	2,977	3,572	4,168	4,763	5,358	6.7	30	12.6	96
27	596.9	1,194	1,791	2,388	2,985	3,581	4,178	4,775	5,372	6.8	31	12.7	97
28	598.5	1,197	1,795	2,394	2,992	3,591	4,189	4,788	5,386	6.9	32	12.8	99
29	600.0	1,200	1,800	2,400	3,000	3,600	4,200	4,800	5,400	7.0	33	12.9	100
30	601.6	1,203	1,805	2,406	3,008	3,609	4,211	4,813	5,414	7.2	34	13.0	102
31	603.1	1,206	1,809	2,413	3,016	3,619	4,222	4,825	5,428	7.3	35	13.1	103
32	604.7	1,209	1,814	2,419	3,023	3,628	4,233	4,838	5,442	7.4	36	13.2	105
33	606.3	1,213	1,819	2,425	3,031	3,637	4,244	4,850	5,456	7.5	37	13.3	106
34	607.8	1,216	1,823	2,431	3,039	3,647	4,255	4,862	5,470	7.6	38	13.4	108
35	609.4	1,219	1,828	2,437	3,047	3,656	4,266	4,875	5,484	7.8	39	13.5	109
36	610.9	1,222	1,833	2,444	3,055	3,666	4,276	4,887	5,498	7.9	40	13.6	111
37	612.5	1,225	1,837	2,450	3,062	3,675	4,287	4,900	5,512	8.0	41	13.7	112
38	614.0	1,228	1,842	2,456	3,070	3,684	4,298	4,912	5,526	8.1	42	13.8	114
39	615.5	1,231	1,847	2,462	3,078	3,694	4,309	4,925	5,540	8.2	43	13.9	115
40	617.2	1,234	1,851	2,469	3,086	3,703	4,320	4,937	5,554	8.3	44	14.0	117
41	618.7	1,237	1,856	2,475	3,094	3,712	4,331	4,950	5,568	8.4	45	14.1	119
42	620.3	1,241	1,861	2,481	3,101	3,722	4,342	4,962	5,582	8.5	46	14.2	120
43	621.8	1,244	1,865	2,487	3,109	3,731	4,353	4,975	5,596	8.6	47	14.3	122
44	623.4	1,247	1,870	2,494	3,117	3,740	4,364	4,987	5,610	8.7	48	14.4	124
45	624.9	1,250	1,875	2,500	3,125	3,750	4,374	4,999	5,624	8.8	49	14.5	125
46	626.5	1,253	1,879	2,506	3,132	3,759	4,385	5,012	5,638	8.9	50	14.6	127
47	628.0	1,256	1,884	2,512	3,140	3,768	4,396	5,024	5,653	9.0	51	14.7	129
48	629.6	1,259	1,889	2,518	3,148	3,778	4,407	5,037	5,667	9.1	52	14.8	130
49	631.2	1,262	1,894	2,525	3,156	3,787	4,418	5,049	5,681	9.2	53	14.9	132
50	632.7	1,265	1,898	2,531	3,164	3,796	4,429	5,062	5,695	9.3	54	15.0	134
51	634.3	1,269	1,903	2,537	3,171	3,806	4,440	5,074	5,709	9.4	55	15.1	135
52	635.8	1,272	1,908	2,543	3,179	3,815	4,451	5,087	5,723	9.5	56	15.2	137
53	637.4	1,275	1,912	2,550	3,187	3,824	4,462	5,099	5,737	9.6	58	15.3	139
54	638.9	1,278	1,917	2,556	3,195	3,834	4,473	5,112	5,751	9.7	59	15.4	141
55	640.5	1,281	1,922	2,562	3,203	3,843	4,484	5,124	5,765	9.8	60	15.5	142
56	642.1	1,284	1,926	2,568	3,210	3,852	4,494	5,136	5,779	9.9	61	15.6	144
57	643.6	1,287	1,931	2,575	3,218	3,862	4,505	5,149	5,793	10.0	62	15.7	146
58	645.2	1,290	1,936	2,581	3,226	3,871	4,516	5,161	5,807	10.1	63	15.8	148
59	646.7	1,293	1,940	2,587	3,234	3,880	4,527	5,174	5,821			15.9	150
60	648.3	1,297	1,945	2,593	3,242	3,890	4,538	5,186	5,835			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

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	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction and height of instrument. <sup>a</sup>			
										<i>Miles.</i>	<i>Feet.</i>	<i>Miles.</i>	<i>Feet.</i>
0	648.3	1,297	1,945	2,593	3,242	3,890	4,538	5,186	5,835				
1	649.9	1,300	1,950	2,599	3,249	3,899	4,549	5,199	5,849	1.6	6	10.2	64
2	651.4	1,303	1,954	2,606	3,257	3,909	4,560	5,211	5,863	2.1	7	10.3	65
3	653.0	1,306	1,959	2,612	3,265	3,918	4,571	5,224	5,877	2.5	8	10.4	67
4	654.5	1,309	1,964	2,618	3,273	3,927	4,582	5,236	5,891	2.8	9	10.5	68
5	656.1	1,312	1,968	2,624	3,281	3,937	4,593	5,249	5,905	3.1	10	10.6	69
6	657.7	1,315	1,973	2,631	3,288	3,946	4,604	5,261	5,919	3.4	11	10.7	70
7	659.2	1,318	1,978	2,637	3,296	3,955	4,615	5,274	5,933	3.6	12	10.8	71
8	660.8	1,322	1,982	2,643	3,304	3,965	4,626	5,286	5,947	3.8	13	10.9	73
9	662.4	1,325	1,987	2,649	3,312	3,974	4,636	5,299	5,961				
10	663.9	1,328	1,992	2,656	3,320	3,983	4,647	5,311	5,975	4.1	14	11.0	74
11	665.5	1,331	1,996	2,662	3,327	3,993	4,658	5,324	5,989	4.3	15	11.1	75
12	667.0	1,334	2,001	2,668	3,335	4,002	4,669	5,336	6,003	4.5	16	11.2	77
13	668.6	1,337	2,006	2,674	3,343	4,012	4,680	5,349	6,017	4.7	17	11.3	78
14	670.2	1,340	2,010	2,681	3,351	4,021	4,691	5,361	6,031	4.8	18	11.4	79
15	671.7	1,343	2,015	2,687	3,359	4,030	4,702	5,374	6,045	5.0	19	11.5	80
16	673.3	1,347	2,020	2,693	3,366	4,040	4,713	5,386	6,060	5.2	20	11.6	82
17	674.8	1,350	2,025	2,699	3,374	4,049	4,724	5,399	6,074	5.4	21	11.7	83
18	676.4	1,353	2,029	2,706	3,382	4,058	4,735	5,411	6,088	5.5	22	11.8	84
19	678.0	1,356	2,034	2,712	3,390	4,068	4,746	5,424	6,102	5.7	23	11.9	86
20	679.5	1,359	2,039	2,718	3,398	4,077	4,757	5,436	6,116	5.8	24	12.0	87
21	681.1	1,362	2,043	2,724	3,405	4,087	4,768	5,449	6,130	6.0	25	12.1	89
22	682.6	1,365	2,048	2,731	3,413	4,096	4,779	5,461	6,144	6.1	26	12.2	90
23	684.2	1,368	2,053	2,737	3,421	4,105	4,789	5,474	6,158	6.3	27	12.3	91
24	685.8	1,372	2,057	2,743	3,429	4,115	4,800	5,486	6,172	6.4	28	12.4	93
25	687.3	1,375	2,062	2,749	3,437	4,124	4,811	5,499	6,186	6.5	29	12.5	94
26	688.9	1,378	2,067	2,756	3,444	4,133	4,822	5,511	6,200	6.7	30	12.6	96
27	690.5	1,381	2,071	2,762	3,452	4,143	4,833	5,524	6,214	6.8	31	12.7	97
28	692.0	1,384	2,076	2,768	3,460	4,152	4,844	5,536	6,228	6.9	32	12.8	99
29	693.6	1,387	2,081	2,774	3,468	4,161	4,855	5,549	6,242	7.0	33	12.9	100
30	695.1	1,390	2,085	2,781	3,476	4,171	4,866	5,561	6,256	7.2	34	13.0	102
31	696.7	1,393	2,090	2,787	3,483	4,180	4,877	5,574	6,270	7.3	35	13.1	103
32	698.3	1,396	2,095	2,793	3,491	4,190	4,888	5,586	6,284	7.4	36	13.2	105
33	699.8	1,400	2,099	2,799	3,499	4,199	4,899	5,599	6,298	7.5	37	13.3	106
34	701.4	1,403	2,104	2,806	3,507	4,208	4,910	5,611	6,312	7.6	38	13.4	108
35	702.9	1,406	2,109	2,812	3,515	4,218	4,921	5,624	6,327	7.8	39	13.5	109
36	704.5	1,409	2,114	2,818	3,523	4,227	4,932	5,636	6,341	7.9	40	13.6	111
37	706.1	1,412	2,118	2,824	3,530	4,236	4,943	5,649	6,355	8.0	41	13.7	112
38	707.6	1,415	2,123	2,831	3,538	4,246	4,953	5,661	6,369	8.1	42	13.8	114
39	709.2	1,418	2,128	2,837	3,546	4,255	4,964	5,674	6,383	8.2	43	13.9	115
40	710.8	1,422	2,132	2,843	3,554	4,265	4,975	5,686	6,397	8.3	44	14.0	117
41	712.3	1,425	2,137	2,849	3,562	4,274	4,986	5,699	6,411	8.4	45	14.1	119
42	713.9	1,428	2,142	2,856	3,569	4,283	4,997	5,711	6,425	8.5	46	14.2	120
43	715.5	1,431	2,146	2,862	3,577	4,293	5,008	5,724	6,439	8.6	47	14.3	122
44	717.0	1,434	2,151	2,868	3,585	4,302	5,019	5,736	6,453	8.7	48	14.4	124
45	718.6	1,437	2,156	2,874	3,593	4,312	5,030	5,749	6,467	8.8	49	14.5	125
46	720.2	1,440	2,160	2,881	3,601	4,321	5,041	5,761	6,481	8.9	50	14.6	127
47	721.7	1,443	2,165	2,887	3,609	4,330	5,052	5,774	6,495	9.0	51	14.7	129
48	723.3	1,447	2,170	2,893	3,616	4,340	5,063	5,786	6,510	9.1	52	14.8	130
49	724.8	1,450	2,175	2,899	3,624	4,349	5,074	5,799	6,524	9.2	53	14.9	132
50	726.4	1,453	2,179	2,906	3,632	4,358	5,085	5,811	6,538	9.3	54	15.0	134
51	728.0	1,456	2,184	2,912	3,640	4,368	5,096	5,824	6,552	9.4	55	15.1	135
52	729.5	1,459	2,189	2,918	3,648	4,377	5,107	5,836	6,566	9.5	56	15.2	137
53	731.1	1,462	2,193	2,924	3,656	4,387	5,118	5,849	6,580	9.6	58	15.3	139
54	732.7	1,465	2,198	2,931	3,663	4,396	5,129	5,861	6,594	9.7	59	15.4	141
55	734.2	1,468	2,203	2,937	3,671	4,405	5,140	5,874	6,608	9.8	60	15.5	142
56	735.8	1,472	2,207	2,943	3,679	4,415	5,151	5,886	6,622	9.9	61	15.6	144
57	737.4	1,475	2,212	2,949	3,687	4,424	5,162	5,899	6,636	10.0	62	15.7	146
58	738.9	1,478	2,217	2,956	3,695	4,434	5,172	5,911	6,650	10.1	63	15.8	148
59	740.5	1,481	2,221	2,962	3,702	4,443	5,183	5,924	6,664			15.9	150
60	742.1	1,484	2,226	2,968	3,710	4,452	5,194	5,936	6,678			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

8°

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
0	742.1	1,484	2,226	2,968	3,710	4,452	5,194	5,936	6,678				
1	743.6	1,487	2,231	2,971	3,715	4,462	5,205	5,949	6,693	1.6	6	10.2	64
2	745.2	1,490	2,236	2,981	3,726	4,471	5,216	5,962	6,707	2.1	7	10.3	65
3	746.8	1,494	2,240	2,987	3,734	4,481	5,227	5,974	6,721	2.6	8	10.4	67
4	748.3	1,497	2,245	2,993	3,742	4,490	5,238	5,987	6,735	3.1	9	10.5	68
5	749.9	1,500	2,250	3,000	3,749	4,499	5,249	5,999	6,749	3.6	10	10.6	69
6	751.5	1,503	2,254	3,006	3,757	4,509	5,260	6,012	6,763	4.1	11	10.7	70
7	753.0	1,506	2,259	3,012	3,765	4,518	5,271	6,021	6,777	4.6	12	10.8	71
8	754.6	1,509	2,264	3,018	3,773	4,528	5,282	6,037	6,791	5.1	13	10.9	73
9	756.2	1,512	2,269	3,025	3,781	4,537	5,293	6,049	6,806				
10	757.7	1,515	2,273	3,031	3,789	4,546	5,304	6,062	6,820	4.1	14	11.0	74
11	759.3	1,519	2,278	3,037	3,797	4,556	5,315	6,074	6,834	4.6	15	11.1	75
12	760.9	1,522	2,283	3,043	3,804	4,565	5,326	6,087	6,848	5.1	16	11.2	77
13	762.4	1,525	2,287	3,050	3,812	4,575	5,337	6,100	6,862	5.6	17	11.3	78
14	764.0	1,528	2,292	3,056	3,820	4,584	5,348	6,112	6,876	6.1	18	11.4	79
15	765.6	1,531	2,297	3,062	3,828	4,593	5,359	6,125	6,890	6.6	19	11.5	80
16	767.1	1,534	2,301	3,069	3,836	4,603	5,370	6,137	6,904	7.1	20	11.6	82
17	768.7	1,537	2,306	3,075	3,844	4,612	5,381	6,150	6,918	7.6	21	11.7	83
18	770.3	1,541	2,311	3,081	3,851	4,622	5,392	6,162	6,933	8.1	22	11.8	84
19	771.8	1,544	2,316	3,087	3,859	4,631	5,403	6,175	6,947	8.6	23	11.9	86
20	773.4	1,547	2,320	3,094	3,867	4,640	5,414	6,187	6,961				
21	775.0	1,550	2,325	3,100	3,875	4,650	5,425	6,200	6,975	5.8	24	12.0	87
22	776.6	1,553	2,330	3,106	3,883	4,659	5,436	6,212	6,989	6.0	25	12.1	89
23	778.1	1,556	2,334	3,112	3,891	4,669	5,447	6,225	7,003	6.5	26	12.2	90
24	779.7	1,559	2,339	3,119	3,898	4,678	5,458	6,237	7,017	6.3	27	12.3	91
25	781.3	1,562	2,344	3,125	3,906	4,688	5,469	6,250	7,031	6.8	28	12.4	93
26	782.8	1,566	2,348	3,131	3,914	4,697	5,480	6,263	7,045	7.3	29	12.5	94
27	784.4	1,569	2,353	3,138	3,922	4,706	5,491	6,275	7,060	7.8	30	12.6	96
28	786.0	1,572	2,358	3,144	3,930	4,716	5,502	6,288	7,074	8.3	31	12.7	97
29	787.5	1,575	2,363	3,150	3,938	4,725	5,513	6,300	7,088	8.8	32	12.8	99
30	789.1	1,578	2,367	3,156	3,945	4,735	5,524	6,313	7,102	9.3	33	12.9	100
31	790.7	1,581	2,372	3,163	3,953	4,744	5,535	6,325	7,116				
32	792.2	1,584	2,377	3,169	3,961	4,753	5,546	6,338	7,130	7.2	34	13.0	102
33	793.8	1,588	2,381	3,175	3,969	4,763	5,557	6,351	7,144	7.3	35	13.1	103
34	795.4	1,591	2,386	3,182	3,977	4,772	5,568	6,363	7,159	7.4	36	13.2	105
35	796.9	1,594	2,391	3,188	3,985	4,782	5,579	6,376	7,173	7.5	37	13.3	106
36	798.5	1,597	2,396	3,194	3,993	4,791	5,590	6,388	7,187	7.6	38	13.4	108
37	800.1	1,600	2,400	3,200	4,001	4,801	5,601	6,401	7,201	7.7	39	13.5	109
38	801.7	1,603	2,405	3,207	4,008	4,810	5,612	6,414	7,215	7.8	40	13.6	111
39	803.2	1,607	2,410	3,213	4,016	4,820	5,623	6,426	7,229	7.9	41	13.7	112
40	804.8	1,610	2,414	3,219	4,021	4,829	5,634	6,439	7,243	8.0	42	13.8	114
41	806.4	1,613	2,419	3,226	4,032	4,838	5,645	6,451	7,258	8.1	43	13.9	115
42	808.0	1,616	2,424	3,232	4,040	4,848	5,656	6,464	7,272	8.2	44	14.0	117
43	809.5	1,619	2,429	3,238	4,048	4,857	5,667	6,476	7,286	8.3	45	14.1	119
44	811.1	1,622	2,433	3,244	4,056	4,867	5,678	6,489	7,300	8.4	46	14.2	120
45	812.7	1,625	2,438	3,251	4,063	4,876	5,689	6,501	7,314	8.5	47	14.3	122
46	814.2	1,628	2,443	3,257	4,071	4,886	5,700	6,514	7,328	8.6	48	14.4	124
47	815.8	1,632	2,447	3,263	4,079	4,895	5,711	6,527	7,342	8.7	49	14.5	125
48	817.4	1,635	2,452	3,270	4,087	4,904	5,722	6,539	7,357	8.8	50	14.6	127
49	819.0	1,638	2,457	3,276	4,095	4,914	5,733	6,552	7,371	8.9	51	14.7	129
50	820.5	1,641	2,462	3,282	4,103	4,923	5,744	6,564	7,385	9.0	52	14.8	130
51	822.1	1,644	2,466	3,288	4,111	4,933	5,755	6,577	7,399	9.1	53	14.9	132
52	823.7	1,647	2,471	3,295	4,118	4,942	5,766	6,590	7,413	9.2	54	15.0	134
53	825.3	1,651	2,476	3,301	4,126	4,952	5,777	6,602	7,427	9.3	55	15.1	135
54	826.8	1,654	2,481	3,307	4,134	4,961	5,788	6,615	7,442	9.4	56	15.2	137
55	828.4	1,657	2,485	3,314	4,142	4,970	5,799	6,627	7,456	9.5	57	15.3	139
56	830.0	1,660	2,490	3,320	4,150	4,980	5,810	6,640	7,470	9.6	58	15.4	141
57	831.5	1,663	2,495	3,326	4,158	4,989	5,821	6,652	7,484	9.7	59	15.5	142
58	833.1	1,666	2,499	3,332	4,166	4,999	5,832	6,665	7,498	9.8	60	15.6	144
59	834.7	1,669	2,504	3,339	4,173	5,008	5,843	6,678	7,512	9.9	61	15.7	146
60	836.3	1,673	2,509	3,345	4,181	5,018	5,854	6,690	7,526	10.1	62	15.8	148
											63	15.9	150
												16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

9

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
0	836.3	1,673	2,509	3,345	4,181	5,018	5,854	6,690	7,526				
1	837.8	1,676	2,514	3,351	4,189	5,027	5,865	6,703	7,541	1.6	6	10.2	64
2	839.4	1,679	2,518	3,358	4,197	5,037	5,876	6,715	7,555	2.1	7	10.3	65
3	841.0	1,682	2,523	3,364	4,206	5,046	5,887	6,728	7,569	2.5	8	10.4	67
4	842.6	1,685	2,528	3,370	4,213	5,055	5,898	6,741	7,583	2.8	9	10.5	68
5	844.2	1,688	2,532	3,377	4,221	5,065	5,909	6,753	7,597	3.1	10	10.6	69
6	845.7	1,691	2,537	3,383	4,229	5,074	5,920	6,766	7,612	3.4	11	10.7	70
7	847.3	1,695	2,542	3,389	4,237	5,084	5,931	6,778	7,626	3.6	12	10.8	71
8	848.9	1,698	2,547	3,396	4,244	5,093	5,942	6,791	7,640	3.8	13	10.9	73
9	850.5	1,701	2,551	3,402	4,252	5,103	5,953	6,804	7,654				
10	852.0	1,704	2,556	3,408	4,260	5,112	5,964	6,816	7,668	4.1	14	11.0	74
11	853.6	1,707	2,561	3,414	4,268	5,122	5,975	6,829	7,683	4.3	15	11.1	75
12	855.2	1,710	2,566	3,421	4,276	5,131	5,986	6,842	7,697	4.5	16	11.2	77
13	856.8	1,714	2,570	3,427	4,284	5,141	5,997	6,854	7,711	4.7	17	11.3	78
14	858.3	1,717	2,575	3,433	4,292	5,150	6,008	6,867	7,725	4.8	18	11.4	79
15	859.9	1,720	2,580	3,440	4,300	5,160	6,020	6,879	7,739	5.0	19	11.5	80
16	861.5	1,723	2,585	3,446	4,308	5,169	6,031	6,892	7,754	5.2	20	11.6	82
17	863.1	1,726	2,589	3,452	4,315	5,179	6,042	6,905	7,768	5.4	21	11.7	83
18	864.7	1,729	2,594	3,459	4,323	5,188	6,053	6,917	7,782	5.5	22	11.8	84
19	866.2	1,732	2,599	3,465	4,331	5,197	6,064	6,930	7,796	5.7	23	11.9	86
20	867.8	1,736	2,603	3,471	4,339	5,207	6,075	6,943	7,810	5.8	24	12.0	87
21	869.4	1,739	2,608	3,478	4,347	5,216	6,086	6,955	7,825	6.0	25	12.1	89
22	871.0	1,742	2,613	3,484	4,355	5,226	6,097	6,968	7,839	6.1	26	12.2	90
23	872.5	1,745	2,618	3,490	4,363	5,235	6,108	6,980	7,853	6.3	27	12.3	91
24	874.1	1,748	2,622	3,496	4,371	5,245	6,119	6,993	7,867	6.4	28	12.4	93
25	875.7	1,751	2,627	3,503	4,379	5,254	6,130	7,006	7,881	6.5	29	12.5	94
26	877.3	1,755	2,632	3,509	4,386	5,264	6,141	7,018	7,896	6.7	30	12.6	96
27	878.8	1,758	2,637	3,515	4,394	5,273	6,152	7,031	7,910	6.8	31	12.7	97
28	880.4	1,761	2,641	3,522	4,402	5,283	6,163	7,043	7,924	6.9	32	12.8	99
29	882.0	1,764	2,646	3,528	4,410	5,292	6,174	7,056	7,938	7.0	33	12.9	100
30	883.6	1,767	2,651	3,534	4,418	5,302	6,185	7,068	7,952	7.2	34	13.0	102
31	885.2	1,770	2,656	3,541	4,426	5,311	6,196	7,081	7,967	7.3	35	13.1	103
32	886.7	1,774	2,660	3,547	4,434	5,320	6,207	7,094	7,981	7.4	36	13.2	105
33	888.3	1,777	2,665	3,553	4,442	5,330	6,218	7,107	7,995	7.5	37	13.3	106
34	889.9	1,780	2,670	3,560	4,450	5,339	6,229	7,119	8,009	7.6	38	13.4	108
35	891.5	1,783	2,674	3,566	4,457	5,349	6,240	7,132	8,023	7.8	39	13.5	109
36	893.1	1,786	2,679	3,572	4,465	5,358	6,252	7,145	8,038	7.9	40	13.6	111
37	894.6	1,789	2,684	3,579	4,473	5,368	6,263	7,157	8,052	8.0	41	13.7	112
38	896.2	1,792	2,689	3,585	4,481	5,377	6,274	7,170	8,066	8.1	42	13.8	114
39	897.8	1,796	2,693	3,591	4,489	5,387	6,285	7,183	8,080	8.2	43	13.9	115
40	899.4	1,799	2,698	3,598	4,497	5,396	6,296	7,195	8,095	8.3	44	14.0	117
41	901.0	1,802	2,703	3,604	4,506	5,406	6,307	7,208	8,109	8.4	45	14.1	119
42	902.5	1,805	2,708	3,610	4,513	5,415	6,318	7,220	8,123	8.5	46	14.2	120
43	904.1	1,808	2,712	3,617	4,521	5,425	6,329	7,233	8,137	8.6	47	14.3	122
44	905.7	1,811	2,717	3,623	4,529	5,434	6,340	7,246	8,151	8.7	48	14.4	124
45	907.3	1,814	2,722	3,629	4,537	5,444	6,351	7,258	8,166	8.8	49	14.5	125
46	908.9	1,818	2,727	3,636	4,544	5,453	6,362	7,271	8,180	8.9	50	14.6	127
47	910.5	1,821	2,731	3,642	4,552	5,463	6,373	7,284	8,194	9.0	51	14.7	129
48	912.0	1,824	2,736	3,648	4,560	5,472	6,384	7,296	8,208	9.1	52	14.8	130
49	913.6	1,827	2,741	3,654	4,568	5,482	6,395	7,309	8,223	9.2	53	14.9	132
50	915.2	1,830	2,746	3,661	4,576	5,491	6,406	7,322	8,237	9.3	54	15.0	134
51	916.8	1,833	2,750	3,667	4,584	5,501	6,417	7,334	8,251	9.4	55	15.1	135
52	918.4	1,837	2,755	3,673	4,592	5,510	6,429	7,347	8,265	9.5	56	15.2	137
53	919.9	1,840	2,760	3,680	4,600	5,520	6,440	7,360	8,279	9.6	58	15.3	139
54	921.5	1,843	2,765	3,686	4,608	5,529	6,451	7,372	8,294	9.7	59	15.4	141
55	923.1	1,846	2,769	3,692	4,616	5,539	6,462	7,385	8,308	9.8	60	15.5	142
56	924.7	1,849	2,774	3,699	4,623	5,548	6,473	7,397	8,322	9.9	61	15.6	144
57	926.3	1,852	2,779	3,705	4,631	5,558	6,484	7,410	8,336	10.0	62	15.7	146
58	927.8	1,855	2,784	3,711	4,639	5,567	6,495	7,423	8,351	10.1	63	15.8	148
59	929.4	1,859	2,788	3,718	4,647	5,577	6,506	7,435	8,365			15.9	150
60	931.0	1,862	2,793	3,724	4,655	5,586	6,517	7,448	8,379			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

10°

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction and height of instrument. <sup>a</sup>			
										Miles.	Feet.	Miles.	Feet.
0	931.0	1,862	2,793	3,724	4,655	5,586	6,517	7,448	8,379				
1	932.6	1,865	2,798	3,730	4,663	5,596	6,528	7,461	8,393	1.6	6	10.2	64
2	934.2	1,868	2,803	3,737	4,671	5,605	6,539	7,473	8,408	2.1	7	10.3	65
3	935.8	1,872	2,807	3,743	4,679	5,615	6,550	7,486	8,422	2.5	8	10.4	67
4	937.4	1,875	2,812	3,749	4,687	5,624	6,561	7,499	8,436	2.8	9	10.5	68
5	938.9	1,878	2,817	3,756	4,695	5,634	6,573	7,512	8,450	3.1	10	10.6	69
6	940.5	1,881	2,822	3,762	4,703	5,643	6,584	7,524	8,465	3.4	11	10.7	70
7	942.1	1,884	2,826	3,768	4,711	5,653	6,595	7,537	8,479	3.6	12	10.8	71
8	943.7	1,887	2,831	3,775	4,718	5,662	6,606	7,550	8,493	3.8	13	10.9	73
9	945.3	1,891	2,836	3,781	4,726	5,672	6,617	7,562	8,508				
10	946.9	1,894	2,841	3,787	4,734	5,681	6,628	7,575	8,522	4.1	14	11.0	74
11	948.5	1,897	2,845	3,794	4,742	5,691	6,639	7,588	8,536	4.3	15	11.1	75
12	950.0	1,900	2,850	3,800	4,750	5,700	6,650	7,600	8,550	4.5	16	11.2	77
13	951.6	1,903	2,855	3,807	4,758	5,710	6,661	7,613	8,565	4.7	17	11.3	78
14	953.2	1,906	2,860	3,813	4,766	5,719	6,672	7,626	8,579	4.8	18	11.4	79
15	954.8	1,910	2,864	3,819	4,774	5,729	6,684	7,638	8,593	5.0	19	11.5	80
16	956.4	1,913	2,869	3,826	4,782	5,738	6,695	7,651	8,607	5.2	20	11.6	82
17	958.0	1,916	2,874	3,832	4,790	5,748	6,706	7,664	8,622	5.4	21	11.7	83
18	959.6	1,919	2,879	3,838	4,798	5,757	6,717	7,676	8,636	5.5	22	11.8	84
19	961.1	1,922	2,883	3,845	4,806	5,767	6,728	7,689	8,650	5.7	23	11.9	86
20	962.7	1,926	2,888	3,851	4,814	5,776	6,739	7,702	8,665	5.8	24	12.0	87
21	964.3	1,929	2,893	3,857	4,822	5,786	6,750	7,715	8,679	6.0	25	12.1	89
22	965.9	1,932	2,898	3,864	4,830	5,795	6,761	7,727	8,693	6.1	26	12.2	90
23	967.5	1,935	2,902	3,870	4,837	5,805	6,772	7,740	8,707	6.3	27	12.3	91
24	969.1	1,938	2,907	3,876	4,845	5,814	6,784	7,753	8,722	6.4	28	12.4	93
25	970.7	1,941	2,912	3,883	4,853	5,824	6,795	7,765	8,736	6.5	29	12.5	94
26	972.2	1,944	2,917	3,889	4,861	5,833	6,806	7,778	8,750	6.7	30	12.6	96
27	973.8	1,948	2,921	3,895	4,869	5,843	6,817	7,791	8,764	6.8	31	12.7	97
28	975.4	1,951	2,926	3,902	4,877	5,853	6,828	7,803	8,779	6.9	32	12.8	99
29	977.0	1,954	2,931	3,908	4,885	5,862	6,839	7,816	8,793	7.0	33	12.9	100
30	978.6	1,957	2,936	3,914	4,893	5,872	6,850	7,829	8,807	7.2	34	13.0	102
31	980.2	1,960	2,941	3,921	4,901	5,881	6,861	7,841	8,822	7.3	35	13.1	103
32	981.8	1,964	2,945	3,927	4,909	5,891	6,872	7,854	8,836	7.4	36	13.2	105
33	983.4	1,967	2,950	3,933	4,917	5,900	6,884	7,867	8,850	7.5	37	13.3	106
34	985.0	1,970	2,955	3,940	4,925	5,910	6,895	7,880	8,865	7.6	38	13.4	108
35	986.5	1,973	2,960	3,946	4,933	5,919	6,906	7,892	8,879	7.8	39	13.5	109
36	988.1	1,976	2,964	3,953	4,941	5,929	6,917	7,905	8,893	7.9	40	13.6	111
37	989.7	1,980	2,969	3,959	4,949	5,938	6,928	7,918	8,908	8.0	41	13.7	112
38	991.3	1,983	2,974	3,965	4,957	5,948	6,939	7,931	8,922	8.1	42	13.8	114
39	992.9	1,986	2,979	3,972	4,965	5,957	6,950	7,943	8,936	8.2	43	13.9	115
40	994.5	1,989	2,984	3,978	4,973	5,967	6,962	7,956	8,951	8.3	44	14.0	117
41	996.1	1,992	2,988	3,984	4,980	5,977	6,973	7,969	8,965	8.4	45	14.1	119
42	997.7	1,995	2,993	3,991	4,988	5,986	6,984	7,981	8,979	8.5	46	14.2	120
43	999.3	1,999	2,998	3,997	4,996	5,996	6,995	7,994	8,993	8.6	47	14.4	122
44	1,000.9	2,002	3,003	4,003	5,004	6,005	7,006	8,007	9,008	8.7	48	14.3	124
45	1,002.5	2,005	3,007	4,010	5,012	6,015	7,017	8,020	9,022	8.8	49	14.5	125
46	1,004.0	2,008	3,012	4,016	5,020	6,024	7,028	8,032	9,036	8.9	50	14.6	127
47	1,005.6	2,011	3,017	4,023	5,028	6,034	7,039	8,045	9,051	9.0	51	14.7	129
48	1,007.2	2,014	3,022	4,029	5,036	6,043	7,051	8,058	9,065	9.1	52	14.8	130
49	1,008.8	2,018	3,026	4,035	5,044	6,053	7,062	8,071	9,079	9.2	53	14.9	132
50	1,010.4	2,021	3,031	4,042	5,052	6,062	7,073	8,083	9,094	9.	54	15.0	134
51	1,012.0	2,024	3,036	4,048	5,060	6,072	7,084	8,096	9,108	9.	55	15.1	135
52	1,013.6	2,027	3,041	4,054	5,068	6,082	7,095	8,109	9,122	9.5	56	15.2	137
53	1,015.2	2,030	3,046	4,061	5,076	6,091	7,106	8,121	9,137	9.6	58	15.3	139
54	1,016.8	2,034	3,050	4,067	5,084	6,101	7,11	8,134	9,151	9.7	59	15.4	141
55	1,018.4	2,037	3,055	4,073	5,092	6,110	7,129	8,147	9,165	9.8	60	15.5	142
56	1,020.0	2,040	3,060	4,080	5,100	6,120	7,140	8,160	9,180	9.9	61	15.6	144
57	1,021.5	2,043	3,065	4,086	5,108	6,129	7,151	8,172	9,194	10.0	62	15.7	146
58	1,023.1	2,046	3,069	4,093	5,116	6,139	7,162	8,185	9,208	10.	63	15.8	148
59	1,024.7	2,049	3,074	4,099	5,124	6,148	7,173	8,198	9,223			15.9	150
60	1,026.3	2,053	3,079	4,105	5,132	6,158	7,184	8,211	9,237			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

11°

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Feet.	Miles.	Feet.
0	1,026.3	2,053	3,079	4,105	5,132	6,158	7,184	8,211	9,237				
1	1,027.9	2,056	3,084	4,112	5,140	6,168	7,195	8,223	9,251	1.6	6	10.2	64
2	1,029.5	2,059	3,089	4,118	5,148	6,177	7,207	8,236	9,266	2.1	7	10.3	65
3	1,031.1	2,062	3,093	4,124	5,156	6,187	7,218	8,249	9,280	2.5	8	10.4	67
4	1,032.7	2,065	3,098	4,131	5,164	6,196	7,229	8,262	9,294	2.8	9	10.5	68
5	1,034.3	2,069	3,103	4,137	5,172	6,206	7,240	8,275	9,309	3.1	10	10.6	69
6	1,036	2,072	3,108	4,144	5,180	6,215	7,251	8,287	9,323	3.4	11	10.7	70
7	1,038	2,075	3,113	4,150	5,188	6,225	7,263	8,300	9,338	3.6	12	10.8	71
8	1,039	2,078	3,117	4,156	5,196	6,235	7,274	8,313	9,352	3.8	13	10.9	73
9	1,041	2,081	3,122	4,163	5,204	6,244	7,285	8,326	9,366				
10	1,042	2,085	3,127	4,169	5,212	6,254	7,296	8,338	9,381	4.1	14	11.0	74
11	1,044	2,088	3,132	4,176	5,219	6,263	7,307	8,351	9,395	4.3	15	11.1	75
12	1,045	2,091	3,136	4,182	5,227	6,273	7,318	8,364	9,409	4.4	16	11.2	77
13	1,047	2,094	3,141	4,188	5,235	6,283	7,330	8,377	9,424	4.7	17	11.3	78
14	1,049	2,097	3,146	4,195	5,243	6,292	7,341	8,390	9,438	4.8	18	11.4	79
15	1,050	2,101	3,151	4,201	5,251	6,302	7,352	8,402	9,453	5.0	19	11.5	80
16	1,052	2,104	3,156	4,208	5,259	6,311	7,363	8,415	9,467	5.2	20	11.6	82
17	1,053	2,107	3,160	4,214	5,267	6,321	7,374	8,428	9,481	5.4	21	11.7	83
18	1,055	2,110	3,165	4,220	5,275	6,330	7,386	8,441	9,496	5.5	22	11.8	84
19	1,057	2,113	3,170	4,227	5,283	6,340	7,397	8,453	9,510	5.7	23	11.9	86
20	1,058	2,117	3,175	4,233	5,291	6,350	7,408	8,466	9,524	5.8	24	12.0	87
21	1,060	2,120	3,180	4,239	5,299	6,359	7,419	8,479	9,539	6.0	25	12.1	89
22	1,061	2,123	3,184	4,246	5,307	6,369	7,430	8,492	9,553	6.1	26	12.2	90
23	1,063	2,126	3,189	4,252	5,315	6,378	7,441	8,504	9,568	6.3	27	12.3	91
24	1,065	2,129	3,194	4,259	5,323	6,388	7,453	8,517	9,582	6.4	28	12.4	93
25	1,066	2,133	3,199	4,265	5,331	6,398	7,464	8,530	9,596	6.5	29	12.5	94
26	1,068	2,136	3,204	4,271	5,339	6,407	7,475	8,543	9,611	6.7	30	12.6	96
27	1,069	2,139	3,208	4,278	5,347	6,417	7,486	8,556	9,625	6.8	31	12.7	97
28	1,071	2,142	3,213	4,284	5,355	6,426	7,497	8,568	9,639	6.9	32	12.8	99
29	1,073	2,145	3,218	4,291	5,363	6,436	7,509	8,581	9,654	7.0	33	12.9	100
30	1,074	2,148	3,223	4,297	5,371	6,445	7,520	8,594	9,668	7.2	34	13.0	102
31	1,076	2,152	3,227	4,303	5,379	6,455	7,531	8,607	9,682	7.3	35	13.1	103
32	1,077	2,156	3,232	4,310	5,387	6,465	7,542	8,619	9,697	7.4	36	13.2	105
33	1,079	2,158	3,237	4,316	5,395	6,474	7,553	8,632	9,711	7.5	37	13.3	106
34	1,081	2,161	3,242	4,323	5,403	6,484	7,564	8,645	9,726	7.6	38	13.4	108
35	1,082	2,164	3,247	4,329	5,411	6,493	7,576	8,658	9,740	7.8	39	13.5	109
36	1,084	2,168	3,252	4,335	5,419	6,503	7,587	8,671	9,755	7.9	40	13.6	111
37	1,085	2,171	3,256	4,342	5,427	6,513	7,598	8,683	9,769	8.0	41	13.7	112
38	1,087	2,174	3,261	4,348	5,435	6,522	7,609	8,696	9,783	8.1	42	13.8	114
39	1,089	2,177	3,266	4,355	5,443	6,532	7,621	8,709	9,798	8.2	43	13.9	115
40	1,090	2,181	3,271	4,361	5,451	6,542	7,632	8,722	9,812	8.3	44	14.0	117
41	1,092	2,184	3,276	4,367	5,459	6,551	7,643	8,735	9,827	8.4	45	14.1	119
42	1,093	2,187	3,280	4,374	5,467	6,561	7,654	8,748	9,841	8.5	46	14.2	120
43	1,096	2,190	3,285	4,380	5,475	6,570	7,665	8,760	9,856	8.6	47	14.3	122
44	1,097	2,193	3,290	4,387	5,483	6,580	7,677	8,773	9,870	8.7	48	14.4	124
45	1,098	2,197	3,295	4,393	5,491	6,590	7,688	8,786	9,884	8.8	49	14.5	125
46	1,100	2,200	3,300	4,399	5,499	6,599	7,699	8,799	9,899	8.9	50	14.6	127
47	1,101	2,203	3,304	4,406	5,507	6,609	7,710	8,812	9,913	9.0	51	14.7	129
48	1,103	2,206	3,309	4,412	5,515	6,618	7,721	8,825	9,928	9.1	52	14.8	130
49	1,105	2,209	3,314	4,419	5,523	6,628	7,733	8,837	9,942	9.2	53	14.9	132
50	1,106	2,213	3,319	4,425	5,531	6,638	7,744	8,850	9,956	9.3	54	15.0	134
51	1,108	2,216	3,324	4,431	5,539	6,647	7,755	8,863	9,971	9.4	55	15.1	135
52	1,109	2,219	3,328	4,438	5,547	6,657	7,766	8,876	9,985	9.5	56	15.2	137
53	1,111	2,222	3,333	4,444	5,555	6,666	7,778	8,889	10,000	9.6	58	15.3	139
54	1,113	2,225	3,338	4,451	5,563	6,676	7,789	8,901	10,014	9.7	59	15.4	141
55	1,114	2,229	3,343	4,457	5,571	6,686	7,800	8,914	10,029	9.8	60	15.5	142
56	1,116	2,232	3,348	4,464	5,579	6,695	7,811	8,927	10,043	9.9	61	15.6	144
57	1,117	2,235	3,352	4,470	5,587	6,705	7,822	8,940	10,057	10.0	62	15.7	146
58	1,119	2,238	3,357	4,476	5,595	6,715	7,834	8,953	10,072	10.1	63	15.8	148
59	1,121	2,241	3,362	4,483	5,603	6,724	7,845	8,966	10,086			15.9	150
60	1,122	2,245	3,367	4,489	5,611	6,734	7,856	8,978	10,101			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as +5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

12°.

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument. <sup>a</sup>			
										<i>Miles.</i>	<i>Fect.</i>	<i>Miles.</i>	<i>Fect.</i>
0	1,122	2,245	3,367	4,489	5,612	6,734	7,856	8,978	10,101				
1	1,124	2,248	3,372	4,496	5,620	6,743	7,867	8,991	10,115	1.6	6	10.2	64
2	1,126	2,251	3,377	4,502	5,628	6,753	7,879	9,004	10,130	2.1	7	10.3	65
3	1,127	2,254	3,381	4,508	5,636	6,763	7,890	9,017	10,144	2.5	8	10.4	67
4	1,129	2,257	3,386	4,515	5,644	6,772	7,901	9,030	10,159	2.8	9	10.5	68
5	1,130	2,261	3,391	4,521	5,652	6,782	7,912	9,043	10,173	3.1	10	10.6	69
6	1,132	2,264	3,396	4,528	5,660	6,792	7,924	9,056	10,188	3.4	11	10.7	70
7	1,134	2,267	3,401	4,534	5,668	6,801	7,935	9,068	10,202	3.6	12	10.8	71
8	1,135	2,270	3,405	4,541	5,676	6,811	7,946	9,081	10,216	3.8	13	10.9	73
9	1,137	2,274	3,410	4,547	5,684	6,821	7,957	9,094	10,231				
10	1,138	2,277	3,415	4,554	5,692	6,830	7,969	9,107	10,245	4.1	14	11.0	74
11	1,140	2,280	3,420	4,560	5,700	6,840	7,980	9,120	10,260	4.3	15	11.1	75
12	1,142	2,283	3,425	4,566	5,708	6,850	7,991	9,133	10,274	4.5	16	11.2	77
13	1,143	2,286	3,430	4,573	5,716	6,859	8,002	9,146	10,289	4.7	17	11.3	78
14	1,145	2,290	3,434	4,579	5,724	6,869	8,014	9,158	10,303	4.8	18	11.4	79
15	1,146	2,293	3,439	4,586	5,732	6,879	8,025	9,171	10,318	5.0	19	11.5	80
16	1,148	2,296	3,444	4,592	5,740	6,888	8,036	9,184	10,332	5.2	20	11.6	82
17	1,150	2,299	3,449	4,599	5,748	6,898	8,047	9,197	10,347	5.4	21	11.7	83
18	1,151	2,302	3,454	4,605	5,756	6,907	8,059	9,210	10,361	5.5	22	11.8	84
19	1,153	2,306	3,459	4,611	5,764	6,917	8,070	9,223	10,376	5.7	23	11.9	86
20	1,154	2,309	3,463	4,618	5,772	6,927	8,081	9,236	10,390	5.8	24	12.0	87
21	1,156	2,312	3,468	4,624	5,780	6,936	8,092	9,249	10,405	6.0	25	12.1	89
22	1,158	2,315	3,473	4,631	5,788	6,946	8,104	9,261	10,419	6.1	26	12.2	90
23	1,159	2,319	3,478	4,637	5,796	6,956	8,115	9,274	10,434	6.3	27	12.3	91
24	1,161	2,322	3,483	4,644	5,804	6,965	8,126	9,287	10,448	6.4	28	12.4	93
25	1,163	2,325	3,487	4,650	5,812	6,975	8,138	9,300	10,463	6.5	29	12.5	94
26	1,164	2,328	3,492	4,656	5,821	6,985	8,149	9,313	10,477	6.7	30	12.6	96
27	1,166	2,331	3,497	4,663	5,829	6,994	8,160	9,326	10,491	6.8	31	12.7	97
28	1,167	2,335	3,502	4,669	5,837	7,004	8,171	9,339	10,506	6.9	32	12.8	99
29	1,169	2,338	3,507	4,676	5,845	7,014	8,183	9,351	10,520	7.0	33	12.9	100
30	1,171	2,341	3,512	4,682	5,853	7,023	8,194	9,364	10,535	7.2	34	13.0	102
31	1,172	2,344	3,516	4,689	5,861	7,033	8,205	9,377	10,549	7.3	35	13.1	103
32	1,174	2,348	3,521	4,695	5,869	7,043	8,216	9,390	10,564	7.4	36	13.2	105
33	1,175	2,351	3,526	4,702	5,877	7,052	8,228	9,403	10,579	7.5	37	13.3	106
34	1,177	2,354	3,531	4,708	5,885	7,062	8,239	9,416	10,593	7.6	38	13.4	108
35	1,179	2,357	3,536	4,714	5,893	7,072	8,250	9,429	10,608	7.8	39	13.5	109
36	1,180	2,360	3,541	4,721	5,901	7,081	8,262	9,442	10,622	7.9	40	13.6	111
37	1,182	2,364	3,546	4,727	5,909	7,091	8,273	9,455	10,637	8.0	41	13.7	112
38	1,183	2,367	3,550	4,734	5,917	7,101	8,284	9,468	10,651	8.1	42	13.8	114
39	1,185	2,370	3,555	4,740	5,925	7,110	8,296	9,481	10,666	8.2	43	13.9	115
40	1,187	2,373	3,560	4,747	5,933	7,120	8,307	9,494	10,680	8.3	44	14.0	117
41	1,188	2,377	3,565	4,753	5,942	7,130	8,318	9,506	10,695	8.4	45	14.1	119
42	1,190	2,380	3,570	4,760	5,950	7,140	8,329	9,519	10,709	8.5	46	14.2	120
43	1,192	2,383	3,575	4,766	5,958	7,149	8,341	9,532	10,724	8.6	47	14.3	122
44	1,193	2,386	3,579	4,773	5,966	7,159	8,352	9,545	10,738	8.7	48	14.4	124
45	1,195	2,390	3,584	4,779	5,974	7,169	8,363	9,558	10,753	8.8	49	14.5	125
46	1,196	2,393	3,589	4,785	5,982	7,178	8,375	9,571	10,767	8.9	50	14.6	127
47	1,198	2,396	3,594	4,792	5,990	7,188	8,386	9,584	10,782	9.0	51	14.7	129
48	1,200	2,399	3,599	4,798	5,998	7,198	8,397	9,597	10,796	9.1	52	14.8	130
49	1,201	2,402	3,604	4,805	6,006	7,207	8,409	9,610	10,811	9.2	53	14.9	132
50	1,203	2,406	3,608	4,811	6,014	7,217	8,420	9,623	10,825	9.3	54	15.0	134
51	1,204	2,409	3,613	4,818	6,022	7,227	8,431	9,636	10,840	9.4	55	15.1	135
52	1,206	2,412	3,618	4,824	6,030	7,236	8,442	9,648	10,855	9.5	56	15.2	137
53	1,208	2,415	3,623	4,831	6,038	7,246	8,454	9,661	10,869	9.6	57	15.3	139
54	1,209	2,419	3,628	4,837	6,046	7,256	8,465	9,674	10,884	9.7	59	15.4	141
55	1,211	2,422	3,633	4,844	6,055	7,265	8,476	9,687	10,898	9.8	60	15.5	142
56	1,213	2,425	3,638	4,850	6,063	7,275	8,488	9,700	10,913	9.9	61	15.6	144
57	1,214	2,428	3,642	4,857	6,071	7,285	8,499	9,713	10,927	10.0	62	15.7	146
58	1,216	2,431	3,647	4,863	6,079	7,294	8,510	9,726	10,942	10.1	63	15.8	148
59	1,217	2,435	3,652	4,869	6,087	7,304	8,521	9,739	10,956			15.9	150
60	1,219	2,438	3,657	4,876	6,095	7,314	8,533	9,752	10,971			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

13°.

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction, and height of instrument. <sup>a</sup>			
										<i>Miles.</i>	<i>Fect.</i>	<i>Miles.</i>	<i>Fect.</i>
0	1,219	2,438	3,657	4,876	6,095	7,314	8,533	9,752	10,971				
1	1,221	2,441	3,662	4,882	6,103	7,324	8,544	9,765	10,985	1.6	6	10.2	64
2	1,222	2,444	3,667	4,889	6,111	7,333	8,556	9,778	11,000	2.1	7	10.3	65
3	1,224	2,448	3,672	4,896	6,119	7,343	8,567	9,791	11,015	2.5	8	10.4	67
4	1,225	2,451	3,676	4,902	6,127	7,353	8,578	9,804	11,029	2.8	9	10.5	68
5	1,227	2,454	3,681	4,908	6,135	7,362	8,590	9,817	11,044	3.1	10	10.6	69
6	1,229	2,457	3,686	4,915	6,143	7,372	8,601	9,830	11,058	3.4	11	10.7	70
7	1,230	2,461	3,691	4,921	6,152	7,382	8,612	9,843	11,073	3.6	12	10.8	71
8	1,232	2,464	3,696	4,928	6,160	7,392	8,624	9,855	11,087	3.8	13	10.9	73
9	1,234	2,467	3,701	4,934	6,168	7,401	8,635	9,868	11,102				
10	1,235	2,470	3,706	4,941	6,176	7,411	8,646	9,881	11,117	4.1	14	11.0	74
11	1,237	2,474	3,710	4,947	6,184	7,421	8,658	9,894	11,131	4.3	15	11.1	75
12	1,238	2,477	3,715	4,954	6,192	7,430	8,669	9,907	11,146	4.5	16	11.2	77
13	1,240	2,480	3,720	4,960	6,200	7,440	8,680	9,920	11,160	4.7	17	11.3	78
14	1,243	2,483	3,725	4,967	6,208	7,450	8,692	9,933	11,175	4.8	18	11.4	79
15	1,245	2,487	3,730	4,973	6,216	7,460	8,703	9,946	11,190	5.0	19	11.5	80
16	1,246	2,490	3,735	4,980	6,224	7,469	8,714	9,959	11,204	5.2	20	11.6	82
17	1,247	2,493	3,740	4,986	6,233	7,479	8,726	9,972	11,219	5.4	21	11.7	83
18	1,248	2,496	3,744	4,993	6,241	7,489	8,737	9,985	11,233	5.5	22	11.8	84
19	1,250	2,500	3,749	4,999	6,249	7,499	8,748	9,998	11,248	5.7	23	11.9	86
20	1,251	2,503	3,754	5,006	6,257	7,508	8,760	10,011	11,262	5.8	24	12.0	87
21	1,253	2,506	3,759	5,012	6,265	7,518	8,771	10,024	11,277	6.0	25	12.1	89
22	1,255	2,509	3,764	5,019	6,273	7,528	8,782	10,037	11,292	6.1	26	12.2	90
23	1,256	2,513	3,769	5,025	6,281	7,537	8,794	10,050	11,306	6.3	27	12.3	91
24	1,258	2,516	3,774	5,032	6,289	7,547	8,805	10,063	11,321	6.4	28	12.4	93
25	1,260	2,519	3,779	5,038	6,297	7,557	8,816	10,076	11,336	6.5	29	12.5	94
26	1,261	2,522	3,783	5,044	6,306	7,567	8,828	10,089	11,350	6.7	30	12.6	96
27	1,263	2,525	3,788	5,051	6,314	7,576	8,839	10,102	11,365	6.8	31	12.7	97
28	1,264	2,529	3,793	5,057	6,322	7,586	8,851	10,115	11,379	6.9	32	12.8	99
29	1,266	2,532	3,798	5,064	6,330	7,596	8,862	10,128	11,394	7.0	33	12.9	100
30	1,268	2,535	3,803	5,070	6,338	7,606	8,873	10,141	11,409	7.2	34	13.0	102
31	1,269	2,538	3,808	5,077	6,346	7,615	8,885	10,154	11,423	7.3	35	13.1	103
32	1,271	2,542	3,813	5,083	6,354	7,625	8,896	10,167	11,438	7.4	36	13.2	105
33	1,273	2,545	3,817	5,090	6,362	7,635	8,907	10,180	11,452	7.5	37	13.3	106
34	1,274	2,548	3,822	5,096	6,371	7,645	8,919	10,193	11,467	7.6	38	13.4	108
35	1,276	2,551	3,827	5,103	6,379	7,654	8,930	10,206	11,482	7.8	39	13.5	109
36	1,277	2,555	3,832	5,109	6,387	7,664	8,942	10,219	11,496	7.9	40	13.6	111
37	1,279	2,558	3,837	5,116	6,395	7,674	8,953	10,232	11,511	8.0	41	13.7	112
38	1,281	2,561	3,842	5,122	6,403	7,684	8,964	10,245	11,526	8.1	42	13.8	114
39	1,282	2,565	3,847	5,129	6,411	7,693	8,976	10,258	11,540	8.2	43	13.9	116
40	1,284	2,568	3,852	5,135	6,419	7,703	8,987	10,271	11,555	8.3	44	14.0	117
41	1,286	2,571	3,857	5,142	6,427	7,713	8,999	10,284	11,569	8.4	45	14.1	119
42	1,287	2,574	3,861	5,149	6,436	7,723	9,010	10,297	11,584	8.5	46	14.2	120
43	1,289	2,578	3,866	5,155	6,444	7,732	9,021	10,310	11,599	8.6	47	14.3	122
44	1,290	2,581	3,871	5,162	6,452	7,742	9,033	10,323	11,613	8.7	48	14.4	124
45	1,292	2,584	3,876	5,168	6,460	7,752	9,044	10,336	11,628	8.8	49	14.5	125
46	1,294	2,587	3,881	5,175	6,468	7,762	9,055	10,349	11,643	8.9	50	14.6	127
47	1,295	2,591	3,886	5,181	6,476	7,771	9,067	10,362	11,657	9.0	51	14.7	129
48	1,297	2,594	3,891	5,188	6,484	7,781	9,078	10,375	11,672	9.1	52	14.8	130
49	1,299	2,597	3,896	5,194	6,493	7,791	9,090	10,388	11,687	9.2	53	14.9	132
50	1,300	2,600	3,900	5,201	6,501	7,801	9,101	10,401	11,701	9.3	54	15.0	134
51	1,302	2,604	3,905	5,207	6,509	7,811	9,112	10,414	11,716	9.4	55	15.1	135
52	1,303	2,607	3,910	5,214	6,517	7,820	9,124	10,427	11,731	9.5	56	15.2	137
53	1,305	2,610	3,915	5,220	6,525	7,830	9,135	10,440	11,745	9.6	58	15.3	139
54	1,307	2,613	3,920	5,227	6,533	7,840	9,147	10,453	11,760	9.7	59	15.4	141
55	1,308	2,617	3,925	5,233	6,541	7,850	9,158	10,466	11,775	9.8	60	15.5	142
56	1,310	2,620	3,930	5,240	6,550	7,859	9,170	10,479	11,789	9.9	61	15.6	144
57	1,312	2,623	3,935	5,246	6,558	7,869	9,181	10,492	11,804	10.0	62	15.7	146
58	1,313	2,626	3,940	5,253	6,566	7,879	9,192	10,506	11,819	10.1	63	15.8	148
59	1,315	2,630	3,945	5,259	6,574	7,889	9,204	10,519	11,833			15.9	150
60	1,316	2,633	3,949	5,266	6,582	7,899	9,215	10,532	11,848			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.



TABLE 26.—For obtaining differences of altitude for any minute, &amp;c.—Continued.

14°.

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument.			
										Miles.	Feet.	Miles.	Feet.
0	1,316	2,633	3,949	5,266	6,582	7,899	9,215	10,532	11,848				
1	1,318	2,636	3,954	5,272	6,590	7,907	9,227	10,545	11,863	1.6	6	10.2	81
2	1,320	2,639	3,959	5,279	6,599	7,918	9,238	10,558	11,877	2.1	7	10.5	65
3	1,321	2,643	3,964	5,285	6,607	7,928	9,249	10,571	11,892	2.5	8	10.4	67
4	1,323	2,646	3,969	5,292	6,615	7,938	9,261	10,584	11,907	2.8	9	10.5	68
5	1,325	2,649	3,974	5,298	6,623	7,948	9,272	10,597	11,921	3.1	10	10.6	69
6	1,326	2,653	3,979	5,305	6,631	7,957	9,284	10,610	11,936	3.4	11	10.7	70
7	1,328	2,656	3,984	5,312	6,639	7,967	9,296	10,623	11,951	3.6	12	10.8	71
8	1,330	2,659	3,989	5,318	6,648	7,977	9,307	10,636	11,966	3.8	13	10.9	72
9	1,331	2,662	3,993	5,325	6,656	7,987	9,318	10,649	11,980				
10	1,333	2,666	3,998	5,331	6,664	7,997	9,329	10,662	11,995	4.1	14	11.0	73
11	1,334	2,669	4,003	5,338	6,672	8,006	9,341	10,675	12,010	4.3	15	11.1	75
12	1,336	2,672	4,008	5,344	6,680	8,016	9,352	10,688	12,024	4.5	16	11.2	77
13	1,338	2,675	4,013	5,351	6,688	8,026	9,364	10,701	12,039	4.7	17	11.3	78
14	1,339	2,679	4,018	5,357	6,697	8,036	9,375	10,715	12,054	4.8	18	11.4	79
15	1,341	2,682	4,023	5,364	6,706	8,046	9,387	10,728	12,069	5.0	19	11.5	80
16	1,343	2,685	4,028	5,370	6,713	8,056	9,398	10,741	12,083	5.2	20	11.6	82
17	1,344	2,688	4,033	5,377	6,721	8,065	9,410	10,754	12,098	5.4	21	11.7	83
18	1,346	2,692	4,038	5,383	6,729	8,075	9,421	10,767	12,113	5.5	22	11.8	84
19	1,348	2,695	4,042	5,390	6,737	8,085	9,432	10,780	12,127	5.7	23	11.9	86
20	1,349	2,698	4,047	5,397	6,746	8,095	9,444	10,793	12,142	5.8	24	12.0	87
21	1,351	2,702	4,052	5,403	6,754	8,105	9,455	10,806	12,157	6.0	25	12.1	89
22	1,352	2,705	4,057	5,410	6,762	8,114	9,467	10,819	12,172	6.1	26	12.2	90
23	1,354	2,708	4,062	5,416	6,770	8,124	9,478	10,832	12,186	6.3	27	12.3	91
24	1,356	2,711	4,067	5,423	6,778	8,134	9,490	10,845	12,201	6.4	28	12.4	93
25	1,357	2,715	4,072	5,429	6,787	8,144	9,501	10,859	12,216	6.5	29	12.5	94
26	1,359	2,718	4,077	5,436	6,795	8,154	9,513	10,872	12,231	6.7	30	12.6	96
27	1,361	2,721	4,082	5,442	6,803	8,164	9,524	10,885	12,245	6.8	31	12.7	97
28	1,362	2,724	4,087	5,449	6,811	8,173	9,536	10,898	12,260	6.9	32	12.8	99
29	1,364	2,728	4,092	5,455	6,819	8,183	9,547	10,911	12,275	7.0	33	12.9	100
30	1,366	2,731	4,097	5,462	6,828	8,193	9,559	10,924	12,290	7.2	34	13.0	102
31	1,367	2,734	4,101	5,469	6,836	8,203	9,570	10,937	12,304	7.3	35	13.1	103
32	1,369	2,738	4,106	5,475	6,844	8,213	9,581	10,950	12,319	7.4	36	13.2	105
33	1,370	2,741	4,111	5,482	6,852	8,223	9,593	10,963	12,334	7.5	37	13.3	106
34	1,372	2,744	4,116	5,488	6,860	8,232	9,604	10,976	12,349	7.6	38	13.4	108
35	1,374	2,747	4,121	5,495	6,868	8,242	9,616	10,990	12,363	7.8	39	13.5	109
36	1,375	2,751	4,126	5,501	6,877	8,252	9,627	11,003	12,378	7.9	40	13.6	111
37	1,377	2,754	4,131	5,508	6,885	8,262	9,639	11,016	12,393	8.0	41	13.7	112
38	1,379	2,757	4,136	5,514	6,893	8,272	9,650	11,029	12,408	8.1	42	13.8	114
39	1,380	2,761	4,141	5,521	6,901	8,282	9,662	11,042	12,422	8.2	43	13.9	115
40	1,382	2,764	4,146	5,528	6,910	8,291	9,673	11,055	12,437	8.3	44	14.0	117
41	1,384	2,767	4,151	5,534	6,918	8,301	9,685	11,068	12,452	8.4	45	14.1	119
42	1,385	2,770	4,156	5,541	6,926	8,311	9,696	11,081	12,467	8.5	46	14.2	120
43	1,387	2,774	4,160	5,547	6,934	8,321	9,708	11,095	12,481	8.6	47	14.3	122
44	1,388	2,777	4,165	5,554	6,942	8,331	9,719	11,108	12,496	8.7	48	14.4	124
45	1,390	2,780	4,170	5,560	6,951	8,341	9,731	11,121	12,511	8.8	49	14.5	125
46	1,392	2,784	4,175	5,567	6,959	8,351	9,742	11,134	12,526	8.9	50	14.6	127
47	1,393	2,787	4,180	5,574	6,967	8,360	9,754	11,147	12,541	9.0	51	14.7	129
48	1,395	2,790	4,185	5,580	6,975	8,370	9,765	11,160	12,555	9.1	52	14.8	130
49	1,397	2,793	4,190	5,587	6,983	8,380	9,777	11,173	12,570	9.2	53	14.9	132
50	1,398	2,797	4,195	5,593	6,992	8,390	9,788	11,187	12,585	9.3	54	15.0	134
51	1,400	2,800	4,200	5,600	7,000	8,400	9,800	11,200	12,600	9.4	55	15.1	135
52	1,402	2,803	4,205	5,606	7,008	8,410	9,811	11,213	12,615	9.5	56	15.2	137
53	1,403	2,807	4,210	5,613	7,016	8,420	9,823	11,226	12,629	9.6	58	15.3	139
54	1,405	2,810	4,215	5,620	7,024	8,429	9,834	11,239	12,644	9.7	59	15.4	141
55	1,407	2,813	4,220	5,626	7,033	8,439	9,846	11,252	12,659	9.8	60	15.5	142
56	1,408	2,816	4,225	5,633	7,041	8,449	9,857	11,265	12,674	9.9	61	15.6	144
57	1,410	2,820	4,230	5,639	7,049	8,459	9,869	11,279	12,689	10.0	62	15.7	146
58	1,411	2,823	4,234	5,646	7,057	8,469	9,880	11,292	12,703	10.1	63	15.8	148
59	1,413	2,826	4,239	5,653	7,066	8,479	9,892	11,305	12,718			15.9	150
60	1,415	2,830	4,244	5,659	7,074	8,489	9,903	11,318	12,733			16.0	151

For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 27.—HORIZONTAL DISTANCES AND ELEVATIONS FROM STADIA READINGS.

This is a most generally useful stadia table for rods reading 1 foot to the 100 feet and with angles up to  $30^\circ$ . The values of other measures than those given in the table are obtained by multiplying the quantities under the proper vertical angle by stadia readings in hundreds of units. The quantity representing the focal distance is very small and is given at the bottom of each page for focal lengths between three-fourths and  $1\frac{1}{4}$  feet and is represented as a constant equal to  $c$ . For ordinary work it is not necessary to take the latter into account. The direct use of the table involves a multiplication for each result obtained.

*Example.*—Let rod intercept be 3.25 feet, and the angle of inclination be  $5^\circ 35'$ . Then the distance on the horizontal would be

$$d=325 \text{ feet.}$$

If we accept the focal distance  $f+c$  as 1.25 feet, we have from the tables

$$d'=3.25 \text{ feet} \times 99.05 + 1.24 = 323.15 \text{ feet,}$$

and

$$h=3.25 \text{ feet} \times 9.68 + 0.11 = 31.57 \text{ feet.}$$

TABLE 27.—*Horizontal distances and elevations from stadia readings.*

Minutes.	0°. .		1°.		2°.		3°.	
	Horizon- tal distance.	Difference of eleva- tion.	Horizon- tal distance.	Difference of eleva- tion.	Horizon- tal distance.	Difference of eleva- tion.	Horizon- tal distance.	Difference of eleva- tion.
0	100.00	0.00	99.97	1.74	99.88	3.49	99.73	5.23
2	100.00	0.06	99.97	1.80	99.87	3.55	99.72	5.28
4	100.00	0.12	99.97	1.86	99.87	3.60	99.71	5.34
6	100.00	0.17	99.96	1.92	99.87	3.66	99.71	5.40
8	100.00	0.23	99.96	1.98	99.86	3.72	99.70	5.46
10	100.00	0.29	99.96	2.04	99.86	3.78	99.69	5.52
12	100.00	0.35	99.96	2.09	99.85	3.84	99.69	5.57
14	100.00	0.41	99.95	2.15	99.85	3.90	99.68	5.63
16	100.00	0.47	99.95	2.21	99.84	3.95	99.68	5.69
18	100.00	0.52	99.95	2.27	99.84	4.01	99.67	5.75
20	100.00	0.58	99.95	2.33	99.83	4.07	99.66	5.80
22	100.00	0.64	99.94	2.38	99.83	4.13	99.66	5.86
24	100.00	0.70	99.94	2.44	99.82	4.18	99.65	5.92
26	99.99	0.76	99.94	2.50	99.82	4.24	99.64	5.98
28	99.99	0.81	99.93	2.56	99.81	4.30	99.63	6.04
30	99.99	0.87	99.93	2.62	99.81	4.36	99.63	6.09
32	99.99	0.93	99.93	2.67	99.80	4.42	99.62	6.15
34	99.99	0.99	99.93	2.73	99.80	4.48	99.62	6.21
36	99.99	1.05	99.92	2.79	99.79	4.53	99.61	6.27
38	99.99	1.11	99.92	2.85	99.79	4.59	99.60	6.33
40	99.99	1.16	99.92	2.91	99.78	4.65	99.59	6.38
42	99.99	1.22	99.91	2.97	99.78	4.71	99.59	6.44
44	99.98	1.28	99.91	3.02	99.77	4.76	99.58	6.50
46	99.98	1.34	99.90	3.08	99.77	4.82	99.57	6.56
48	99.98	1.40	99.90	3.14	99.76	4.88	99.56	6.61
50	99.98	1.45	99.90	3.20	99.76	4.94	99.56	6.67
52	99.98	1.51	99.89	3.26	99.75	4.99	99.55	6.73
54	99.98	1.57	99.89	3.31	99.74	5.05	99.54	6.78
56	99.97	1.63	99.89	3.37	99.74	5.11	99.53	6.84
58	99.97	1.69	99.88	3.43	99.73	5.17	99.52	6.90
60	99.97	1.74	99.88	3.49	99.73	5.23	99.51	6.96
$c=0.75$	0.75	0.01	0.75	0.02	0.75	0.03	0.75	0.05
$c=1.00$	1.00	0.01	1.00	0.03	1.00	0.04	1.00	0.06
$c=1.25$	1.25	0.02	1.25	0.03	1.25	0.05	1.25	0.08

TABLE 27.—*Horizontal distances and elevations from stadia readings—Continued.*

Minutes.	4°.		5°.		6°.		7°.	
	Horizon- tal distances.	Difference of eleva- tion.	Horizon- tal distances.	Difference of eleva- tion.	Horizon- tal distances.	Difference of eleva- tion.	Horizon- tal distances.	Difference of eleva- tion.
0	99.51	6.96	99.24	8.68	98.91	10.40	98.51	12.10
2	99.51	7.02	99.23	8.74	98.90	10.45	98.50	12.15
4	99.50	7.07	99.22	8.80	98.88	10.51	98.48	12.21
6	99.49	7.13	99.21	8.85	98.87	10.57	98.47	12.26
8	99.48	7.19	99.20	8.91	98.86	10.62	98.46	12.32
10	99.47	7.25	99.19	8.97	98.85	10.68	98.44	12.38
12	99.46	7.30	99.18	9.03	98.83	10.74	98.43	12.43
14	99.46	7.36	99.17	9.08	98.82	10.79	98.41	12.49
16	99.45	7.42	99.16	9.14	98.81	10.85	98.40	12.55
18	99.44	7.48	99.15	9.20	98.80	10.91	98.39	12.60
20	99.43	7.53	99.14	9.25	98.78	10.96	98.37	12.66
22	99.42	7.59	99.13	9.31	98.77	11.02	98.36	12.72
24	99.41	7.65	99.11	9.37	98.76	11.08	98.34	12.77
26	99.40	7.71	99.10	9.43	98.74	11.13	98.33	12.83
28	99.39	7.76	99.09	9.48	98.73	11.19	98.31	12.88
30	99.38	7.82	99.08	9.54	98.72	11.25	98.29	12.94
32	99.33	7.88	99.07	9.60	98.71	11.30	98.28	13.00
34	99.37	7.94	99.06	9.65	98.69	11.36	98.27	13.05
36	99.36	7.99	99.05	9.71	98.68	11.42	98.25	13.11
38	99.35	8.05	99.04	9.77	98.67	11.47	98.24	13.17
40	99.34	8.11	99.03	9.83	98.65	11.53	98.22	13.22
42	99.33	8.17	99.01	9.88	98.64	11.59	98.20	13.28
44	99.32	8.22	99.00	9.94	98.63	11.64	98.19	13.33
46	99.31	8.28	98.99	10.00	98.61	11.70	98.17	13.39
48	99.30	8.34	98.98	10.05	98.60	11.76	98.16	13.45
50	99.29	8.40	98.97	10.11	98.58	11.81	98.14	13.50
52	99.28	8.45	98.96	10.17	98.57	11.87	98.13	13.56
54	99.27	8.51	98.94	10.22	98.56	11.93	98.11	13.61
56	99.26	8.57	98.93	10.28	98.54	11.98	98.10	13.67
58	99.25	8.63	98.92	10.34	98.53	12.04	98.08	13.73
60	99.24	8.68	98.91	10.40	98.51	12.10	98.06	13.78
<i>c</i> =0.75	0.75	0.06	0.75	0.07	0.75	0.08	0.74	0.10
<i>c</i> =1.00	1.00	0.08	0.99	0.09	0.99	0.11	0.99	0.13
<i>c</i> =1.25	1.25	0.10	1.24	0.11	1.24	0.14	1.24	0.16

## GEOGRAPHIC TABLES AND FORMULAS.

TABLE 27.—Horizontal distances and elevations from stadia readings—Continued.

Stations.	8°.		9°.		10°.		11°.	
	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.
0	98.06	13.78	97.55	15.45	96.98	17.10	96.36	18.73
2	98.05	13.84	97.53	15.51	96.96	17.16	96.34	18.78
4	98.03	13.89	97.52	15.56	96.94	17.21	96.32	18.84
6	98.01	13.95	97.50	15.62	96.92	17.26	96.29	18.89
8	98.00	14.01	97.48	15.67	96.90	17.32	96.27	18.95
10	97.98	14.06	97.46	15.73	96.88	17.37	96.25	19.00
12	97.97	14.12	97.44	15.78	96.86	17.43	96.23	19.05
14	97.95	14.17	97.43	15.84	96.84	17.48	96.21	19.11
16	97.93	14.23	97.41	15.89	96.82	17.54	96.18	19.16
18	97.92	14.28	97.39	15.95	96.80	17.59	96.16	19.21
20	97.90	14.34	97.37	16.00	96.78	17.65	96.14	19.27
22	97.88	14.40	97.35	16.06	96.76	17.70	96.12	19.32
24	97.87	14.45	97.33	16.11	96.74	17.76	96.09	19.38
26	97.85	14.51	97.31	16.17	96.72	17.81	96.07	19.43
28	97.83	14.56	97.29	16.22	96.70	17.86	96.05	19.48
30	97.82	14.62	97.28	16.28	96.68	17.92	96.03	19.54
32	97.80	14.67	97.26	16.33	96.66	17.97	96.00	19.59
34	97.78	14.73	97.24	16.39	96.64	18.03	95.98	19.64
36	97.76	14.79	97.22	16.44	96.62	18.08	95.96	19.70
38	97.75	14.84	97.20	16.50	96.60	18.14	95.93	19.75
40	97.73	14.90	97.18	16.55	96.57	18.19	95.91	19.80
42	97.71	14.95	97.16	16.61	96.55	18.24	95.89	19.86
44	97.69	15.01	97.14	16.66	96.53	18.30	95.86	19.91
46	97.68	15.06	97.12	16.72	96.51	18.35	95.84	19.96
48	97.66	15.12	97.10	16.77	96.49	18.41	95.82	20.02
50	97.64	15.17	97.08	16.83	96.47	18.46	95.79	20.07
52	97.62	15.23	97.06	16.88	96.45	18.51	95.77	20.12
54	97.61	15.28	97.04	16.94	96.42	18.57	95.75	20.18
56	97.59	15.34	97.02	16.99	96.40	18.62	95.72	20.23
58	97.57	15.40	97.00	17.05	96.38	18.68	95.70	20.28
60	97.55	15.45	96.98	17.10	96.36	18.73	95.68	20.34
c=0.75	0.74	0.11	0.74	0.12	0.74	0.14	0.73	0.15
c=1.00	0.99	0.15	0.99	0.16	0.98	0.18	0.98	0.20
c=1.25	1.23	0.18	1.23	0.21	1.23	0.23	1.22	0.25

TABLE 27.—*Horizontal distances and elevations from stadia readings—Continued.*

Minutes.	12°.		13°.		14°.		15°.	
	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.
0	95.68	20.34	94.94	21.92	94.15	23.47	93.30	25.00
2	95.65	20.39	94.91	21.97	94.12	23.52	93.27	25.05
4	95.63	20.44	94.89	22.02	94.09	23.58	93.24	25.10
6	95.61	20.50	94.86	22.08	94.07	23.63	93.21	25.15
8	95.58	20.55	94.84	22.13	94.04	23.68	93.18	25.20
10	95.56	20.60	94.81	22.18	94.01	23.73	93.16	25.25
12	95.53	20.66	94.79	22.23	93.98	23.78	93.13	25.30
14	95.51	20.71	94.76	22.28	93.95	23.83	93.10	25.35
16	95.49	20.76	94.73	22.34	93.93	23.88	93.07	25.40
18	95.46	20.81	94.71	22.39	93.90	23.93	93.04	25.45
20	95.44	20.87	94.68	22.44	93.87	23.99	93.01	25.50
22	95.41	20.92	94.66	22.49	93.84	24.04	92.98	25.55
24	95.39	20.97	94.63	22.54	93.81	24.09	92.95	25.60
26	95.36	21.03	94.60	22.60	93.79	24.14	92.92	25.65
28	95.34	21.08	94.58	22.65	93.76	24.19	92.89	25.70
30	95.32	21.13	94.55	22.70	93.73	24.24	92.86	25.75
32	95.29	21.18	94.52	22.75	93.70	24.29	92.83	25.80
34	95.27	21.24	94.50	22.80	93.67	24.34	92.80	25.85
36	95.24	21.29	94.47	22.85	93.65	24.39	92.77	25.90
38	95.22	21.34	94.44	22.91	93.62	24.44	92.74	25.95
40	95.19	21.39	94.42	22.96	93.59	24.49	92.71	26.00
42	95.17	21.45	94.39	23.01	93.56	24.55	92.68	26.05
44	95.14	21.50	94.36	23.06	93.53	24.60	92.65	26.10
46	95.12	21.55	94.34	23.11	93.50	24.65	92.62	26.15
48	95.09	21.60	94.31	23.16	93.47	24.70	92.59	26.20
50	95.07	21.66	94.28	23.22	93.45	24.75	92.56	26.25
52	95.04	21.71	94.26	23.27	93.42	24.80	92.53	26.30
54	95.02	21.76	94.23	23.32	93.39	24.85	92.49	26.35
56	94.99	21.81	94.20	23.37	93.36	24.90	92.46	26.40
58	94.97	21.87	94.17	23.42	93.33	24.95	92.43	26.45
60	94.94	21.92	94.15	23.47	93.30	25.00	92.40	26.50
$c=0.75$	0.73	0.16	0.73	0.17	0.73	0.19	0.72	0.20
$c=1.00$	0.98	0.22	0.97	0.23	0.97	0.25	0.96	0.27
$c=1.25$	1.22	0.27	1.21	0.29	1.21	0.31	1.20	0.34

TABLE 27.—Horizontal distances and elevations from stadia readings—Continued.

Minutes.	16°.		17°.		18°.		19°.	
	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.
0	92.40	28.50	91.45	27.96	90.45	29.39	89.40	30.78
2	92.37	28.55	91.42	28.01	90.42	29.44	89.36	30.83
4	92.34	28.59	91.39	28.06	90.38	29.48	89.33	30.87
6	92.31	28.64	91.35	28.10	90.35	29.53	89.29	30.92
8	92.28	28.69	91.32	28.15	90.31	29.58	89.26	30.97
10	92.25	28.74	91.29	28.20	90.28	29.62	89.22	31.01
12	92.22	28.79	91.26	28.25	90.24	29.67	89.18	31.06
14	92.19	28.84	91.22	28.30	90.21	29.72	89.15	31.10
16	92.15	28.89	91.19	28.34	90.18	29.76	89.11	31.15
18	92.12	28.94	91.16	28.39	90.14	29.81	89.08	31.19
20	92.09	28.99	91.12	28.44	90.11	29.86	89.04	31.24
22	92.06	27.04	91.09	28.49	90.07	29.90	89.00	31.28
24	92.03	27.09	91.06	28.54	90.04	29.95	88.96	31.33
26	92.00	27.13	91.02	28.58	90.00	30.00	88.93	31.38
28	91.97	27.18	90.99	28.63	89.97	30.04	88.89	31.42
30	91.93	27.23	90.96	28.68	89.93	30.09	88.86	31.47
32	91.90	27.28	90.92	28.73	89.90	30.14	88.82	31.51
34	91.87	27.33	90.89	28.77	89.86	30.19	88.78	31.56
36	91.84	27.38	90.86	28.82	89.83	30.23	88.75	31.60
38	91.81	27.43	90.82	28.87	89.79	30.28	88.71	31.65
40	91.77	27.48	90.79	28.92	89.76	30.32	88.67	31.69
42	91.74	27.52	90.76	28.96	89.72	30.37	88.64	31.74
44	91.71	27.57	90.72	29.01	89.69	30.41	88.60	31.78
46	91.68	27.62	90.69	29.06	89.65	30.46	88.56	31.83
48	91.65	27.67	90.66	29.11	89.61	30.51	88.53	31.87
50	91.61	27.72	90.62	29.15	89.58	30.55	88.49	31.92
52	91.58	27.77	90.59	29.20	89.54	30.60	88.45	31.96
54	91.55	27.81	90.55	29.25	89.51	30.65	88.41	32.01
56	91.52	27.86	90.52	29.30	89.47	30.69	88.38	32.05
58	91.48	27.91	90.48	29.34	89.44	30.74	88.34	32.09
60	91.45	27.96	90.45	29.39	89.40	30.78	88.30	32.14
<i>c</i> =0.75	0.72	0.21	0.72	0.23	0.71	0.24	0.71	0.25
<i>c</i> =1.00	0.86	0.28	0.95	0.30	0.95	0.32	0.94	0.33
<i>c</i> =1.25	1.20	0.35	1.19	0.38	1.19	0.40	1.18	0.42

TABLE 27.—*Horizontal distances and elevations from stadia readings—Continued.*

Minutes.	20°.		21°.		22°.		23°.	
	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.
0	88.30	32.14	87.16	33.46	85.97	34.73	84.73	35.97
2	88.26	32.18	87.12	33.50	85.93	34.77	84.69	36.01
4	88.23	32.23	87.08	33.54	85.89	34.82	84.65	36.05
6	88.19	32.27	87.04	33.59	85.85	34.86	84.61	36.09
8	88.15	32.32	87.00	33.63	85.80	34.90	84.57	36.13
10	88.11	32.36	86.96	33.67	85.76	34.94	84.52	36.17
12	88.08	32.41	86.92	33.72	85.72	34.98	84.48	36.21
14	88.04	32.45	86.88	33.76	85.68	35.02	84.44	36.25
16	88.00	32.49	86.84	33.80	85.64	35.07	84.40	36.29
18	87.96	32.54	86.80	33.84	85.60	35.11	84.35	36.33
20	87.93	32.58	86.77	33.89	85.56	35.15	84.31	36.37
22	87.89	32.63	86.73	33.93	85.52	35.19	84.27	36.41
24	87.85	32.67	86.69	33.97	85.48	35.23	84.23	36.45
26	87.81	32.72	86.65	34.01	85.44	35.27	84.18	36.49
28	87.77	32.76	86.61	34.06	85.40	35.31	84.14	36.53
30	87.74	32.80	86.57	34.10	85.36	35.36	84.10	36.57
32	87.70	32.85	86.53	34.14	85.31	35.40	84.06	36.61
34	87.66	32.89	86.49	34.18	85.27	35.44	84.01	36.65
36	87.62	32.93	86.45	34.23	85.23	35.48	83.97	36.69
38	87.58	32.98	86.41	34.27	85.19	35.52	83.93	36.73
40	87.54	33.02	86.37	34.31	85.15	35.56	83.89	36.77
42	87.51	33.07	86.33	34.35	85.11	35.60	83.84	36.80
44	87.47	33.11	86.29	34.40	85.07	35.64	83.80	36.84
46	87.43	33.15	86.25	34.44	85.02	35.68	83.76	36.88
48	87.39	33.20	86.21	34.48	84.98	35.72	83.72	36.92
50	87.35	33.24	86.17	34.52	84.94	35.76	83.67	36.96
52	87.31	33.28	86.13	34.57	84.90	35.80	83.63	37.00
54	87.27	33.33	86.09	34.61	84.86	35.85	83.59	37.04
56	87.24	33.37	86.05	34.65	84.82	35.89	83.54	37.08
58	87.20	33.41	86.01	34.69	84.77	35.93	83.50	37.12
60	87.16	33.46	85.97	34.73	84.73	35.97	83.46	37.16
$c=0.75$	0.70	0.26	0.70	0.27	0.69	0.29	0.69	0.30
$c=1.00$	0.94	0.35	0.93	0.37	0.92	0.38	0.92	0.40
$c=1.25$	1.17	0.44	1.16	0.46	1.15	0.48	1.15	0.50



TABLE 27.—Horizontal distances and elevations from stadia readings—Continued.

Minutes.	24°.		25°.		26°.		27°.	
	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.
0	83.46	37.16	82.14	38.30	80.78	39.40	79.39	40.45
2	83.41	37.20	82.09	38.34	80.74	39.44	79.34	40.49
4	83.37	37.23	82.05	38.38	80.69	39.47	79.30	40.52
6	83.33	37.27	82.01	38.41	80.65	39.51	79.25	40.55
8	83.28	37.31	81.96	38.45	80.60	39.54	79.20	40.59
10	83.24	37.35	81.92	38.49	80.55	39.58	79.15	40.62
12	83.20	37.39	81.87	38.53	80.51	39.61	79.11	40.66
14	83.15	37.43	81.83	38.56	80.46	39.65	79.06	40.69
16	83.11	37.47	81.78	38.60	80.41	39.69	79.01	40.72
18	83.07	37.51	81.74	38.64	80.37	39.72	78.96	40.76
20	83.02	37.54	81.69	38.67	80.32	39.76	78.92	40.79
22	82.98	37.58	81.65	38.71	80.28	39.79	78.87	40.82
24	82.93	37.62	81.60	38.75	80.23	39.83	78.82	40.86
26	82.89	37.66	81.56	38.78	80.18	39.86	78.77	40.89
28	82.85	37.70	81.51	38.82	80.14	39.90	78.73	40.92
30	82.80	37.74	81.47	38.86	80.09	39.93	78.68	40.96
32	82.76	37.77	81.42	38.89	80.04	39.97	78.63	40.99
34	82.72	37.81	81.38	38.93	80.00	40.00	78.58	41.02
36	82.67	37.85	81.33	38.97	79.95	40.04	78.54	41.06
38	82.63	37.89	81.28	39.00	79.90	40.07	78.49	41.09
40	82.58	37.93	81.24	39.04	79.86	40.11	78.44	41.12
42	82.54	37.96	81.19	39.08	79.81	40.14	78.39	41.16
44	82.49	38.00	81.15	39.11	79.76	40.18	78.34	41.19
46	82.45	38.04	81.10	39.15	79.72	40.21	78.30	41.22
48	82.41	38.08	81.06	39.18	79.67	40.24	78.25	41.26
50	82.36	38.11	81.01	39.22	79.62	40.28	78.20	41.29
52	82.32	38.15	80.97	39.26	79.58	40.31	78.15	41.32
54	82.27	38.19	80.92	39.29	79.53	40.35	78.10	41.35
56	82.23	38.23	80.87	39.33	79.48	40.38	78.06	41.39
58	82.18	38.26	80.83	39.36	79.44	40.42	78.01	41.42
60	82.14	38.30	80.78	39.40	79.39	40.45	77.96	41.45
$c=0.75$	0.68	0.31	0.68	0.32	0.67	0.33	0.66	0.35
$c=1.00$	0.91	0.41	0.90	0.43	0.89	0.45	0.89	0.46
$c=1.25$	1.14	0.52	1.13	0.54	1.12	0.56	1.11	0.58

TABLE 27.—*Horizontal distances and elevations from stadia readings—Continued.*

Minutes.	28°.		29°.		30°.	
	Horizon- tal dis- tances.	Difference of eleva- tions.	Horizon- tal dis- tances.	Difference of eleva- tions.	Horizon- tal dis- tances.	Difference of eleva- tions.
0	77.96	41.45	76.50	42.40	75.00	43.30
2	77.91	41.48	76.45	42.43	74.95	43.33
4	77.86	41.52	76.40	42.46	74.90	43.36
6	77.81	41.55	76.35	42.49	74.85	43.39
8	77.77	41.58	76.30	42.53	74.80	43.42
10	77.72	41.61	76.25	42.56	74.75	43.45
12	77.67	41.65	76.20	42.59	74.70	43.47
14	77.62	41.68	76.15	42.62	74.65	43.50
16	77.57	41.71	76.10	42.65	74.60	43.53
18	77.52	41.74	76.05	42.68	74.55	43.56
20	77.48	41.77	76.00	42.71	74.49	43.59
22	77.42	41.81	75.95	42.74	74.44	43.62
24	77.38	41.84	75.90	42.77	74.39	43.65
26	77.33	41.87	75.85	42.80	74.34	43.67
28	77.28	41.90	75.80	42.83	74.29	43.70
30	77.23	41.93	75.75	42.86	74.24	43.73
32	77.18	41.97	75.70	42.89	74.19	43.76
34	77.13	42.00	75.65	42.92	74.14	43.79
36	77.09	42.03	75.60	42.95	74.09	43.82
38	77.04	42.06	75.55	42.98	74.04	43.84
40	76.99	42.09	75.50	43.01	73.99	43.87
42	76.94	42.12	75.45	43.04	73.93	43.90
44	76.89	42.15	75.40	43.07	73.88	43.93
46	76.84	42.19	75.35	43.10	73.83	43.95
48	76.79	42.22	75.30	43.13	73.78	43.98
50	76.74	42.25	75.25	43.16	73.73	44.01
52	76.69	42.28	75.20	43.18	73.68	44.04
54	76.64	42.31	75.15	43.21	73.63	44.07
56	76.59	42.34	75.10	43.24	73.58	44.09
58	76.55	42.37	75.05	43.27	73.52	44.12
60	76.50	42.40	75.00	43.30	73.47	44.15
$c=0.75$	0.66	0.36	0.65	0.37	0.65	0.38
$c=1.00$	0.88	0.48	0.87	0.49	0.86	0.51
$c=1.25$	1.10	0.60	1.09	0.62	1.08	0.64

TABLE 28.—*For converting metric into United States measures.*

## LINEAR

Meters.	Inches.	Meters.	Feet.	Meters.	Yards.	Kilo-meters.	Miles.
1	39.3700	1	3.280833	1	1.093611	1	0.62137
2	78.7400	2	6.561667	2	2.187222	2	1.24274
3	118.1100	3	9.842500	3	3.280833	3	1.86411
4	157.4800	4	13.123333	4	4.374444	4	2.48548
5	196.8500	5	16.404166	5	5.468056	5	3.10685
6	236.2200	6	19.685000	6	6.561667	6	3.72822
7	275.5900	7	22.965833	7	7.655278	7	4.34959
8	314.9600	8	26.246666	8	8.748889	8	4.97086
9	354.3300	9	29.527500	9	9.842500	9	5.59233

## SQUARE.

Square centi-meters.	Square inches.	Square meters.	Square feet.	Square meters.	Square yards.	Hec-tares.	Acres.
1	0.1550	1	10.764	1	1.196	1	2.471
2	0.3100	2	21.528	2	2.392	2	4.942
3	0.4650	3	32.292	3	3.588	3	7.413
4	0.6200	4	43.055	4	4.784	4	9.884
5	0.7750	5	53.819	5	5.980	5	12.355
6	0.9300	6	64.583	6	7.176	6	14.826
7	1.0850	7	75.347	7	8.372	7	17.297
8	1.2400	8	86.111	8	9.568	8	19.768
9	1.3950	9	96.875	9	10.764	9	22.239

TABLE 29.—*For converting United States measures into metric.*

## LINEAR.

Inches.	Milli-meters.	Feet.	Meters.	Yards.	Meters.	Miles.	Kilo-meters.
1	25.4001	1	0.304801	1	0.914402	1	1.60935
2	50.8001	2	0.609601	2	1.828804	2	3.21869
3	76.2002	3	0.914402	3	2.743205	3	4.82804
4	101.6002	4	1.219202	4	3.657607	4	6.43739
5	127.0003	5	1.524003	5	4.572009	5	8.04674
6	152.4003	6	1.828804	6	5.486411	6	9.65608
7	177.8004	7	2.133604	7	6.400813	7	11.26543
8	203.2004	8	2.438405	8	7.315215	8	12.87478
9	228.6005	9	2.743205	9	8.229616	9	14.48412

## SQUARE.

Square inches.	Square centi-meters.	Square feet.	Square deci-meters.	Square yards.	Square meters.	Acres.	Hec-tares.
1	6.452	1	9.290	1	0.836	1	0.4047
2	12.903	2	18.581	2	1.672	2	0.8094
3	19.355	3	27.871	3	2.508	3	1.2141
4	25.807	4	37.161	4	3.344	4	1.6187
5	32.258	5	46.452	5	4.181	5	2.0234
6	38.710	6	55.742	6	5.017	6	2.4281
7	45.161	7	65.032	7	5.853	7	2.8328
8	51.613	8	74.323	8	6.689	8	3.2375
9	58.065	9	83.613	9	7.525	9	3.6422

TABLE 30.—FOR INTERCONVERSION OF MILES AND LOGARITHMS OF METERS, FOR DISTANCES FROM 10 TO 100 MILES.

The value adopted for the meter is 39.3700 inches. Distances between triangulation stations are given in logarithms of meters, but for general use distances in miles are most frequently desired.

The following examples illustrate use of the table:

To find the number of miles corresponding to log. distance in meters ..... 4. 56857  
Next lower log. in table is for 23.00 miles ..... 4. 56838

Difference ..... 19

Corresponding to tabular difference for 0.01 mile.  
Hence distance required is 23.01 miles.

For distances less than 10 miles proceed as above; first adding 1 to the characteristic of the given logarithm and afterwards dividing the corresponding number of miles by 10. Example:

Having given the log. 3.84062, which is less than any given in the table, and therefore for a distance less than 10 miles, adding 1 to the characteristic of the logarithm gives 4.84062, which corresponds to a distance of 43.05 miles. Hence the distance sought is  $\frac{43.05}{10} = 4.305$  miles.

To change—		(Add.)
Log. of miles to log. of meters	.....	3. 2066498
Log. of yards to log. of meters	.....	9. 9611371
Log. of feet to log. of meters	.....	9. 4840158
Log. of inches to log. of meters	.....	8. 4048346
Log. of meters to log. of miles	.....	6. 7933502
Log. of meters to log. of yards	.....	0. 0388629
Log. of meters to log. of feet	.....	0. 5159842
Log. of meters to log. of inches	.....	1. 5951654

TABLE 30.—For interconversion of miles and logarithms of meters.

[Prepared by S. S. Gannett.]

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
10. 00	4. 20665	43	10. 50	4. 22784	41	11. 00	4. 24804	39
. 05	4. 20882		. 55	4. 22990		. 05	4. 25001	
. 10	4. 21097		. 60	4. 23196		. 10	4. 25197	
. 15	4. 21312		. 65	4. 23400		. 15	4. 25393	
. 20	4. 21525	42	. 70	4. 23603		. 20	4. 25587	
. 25	4. 21737		. 75	4. 23806	40	. 25	4. 25780	
. 30	4. 21949		. 80	4. 24007		. 30	4. 25973	38
. 35	4. 22159		. 85	4. 24208		. 35	4. 26165	
. 40	4. 22368		. 90	4. 24408		. 40	4. 26355	
. 45	4. 22577	41	. 95	4. 24606		. 45	4. 26545	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
11.50	4.26735	38	14.00	4.35278	31	16.50	4.42413	26
.55	4.26923		.05	4.35433		.55	4.42545	
.60	4.27111	37	.10	4.35587		.60	4.42676	
.65	4.27298		.15	4.35741		.65	4.42806	
.70	4.27484		.20	4.35894		.70	4.42937	
.75	4.27669		.25	4.36047	30	.75	4.43067	
.80	4.27853		.30	4.36199		.80	4.43196	
.85	4.28037		.35	4.36350		.85	4.43325	
.90	4.28220	36	.40	4.36501		.90	4.43454	
.95	4.28402		.45	4.36652		.95	4.43582	
12.00	4.28583		.50	4.36802		17.00	4.43710	25
.05	4.28764		.55	4.36951		.05	4.43837	
.10	4.28944		.60	4.37100		.10	4.43964	
.15	4.29123		.65	4.37249		.15	4.44091	
.20	4.29301		.70	4.37397	29	.20	4.44218	
.25	4.29479	35	.75	4.37544		.25	4.44344	
.30	4.29656		.80	4.37691		.30	4.44470	
.35	4.29832		.85	4.37838		.35	4.44595	
.40	4.30007		.90	4.37984		.40	4.44720	
.45	4.30182		.95	4.38129		.45	4.44845	
.50	4.30356		15.00	4.38274		.50	4.44969	
.55	4.30529		.05	4.39419		.55	4.45093	
.60	4.30702	34	.10	4.38563		.60	4.45216	
.65	4.30874		.15	4.38706		.65	4.45339	
.70	4.31046		.20	4.38849		.70	4.45462	
.75	4.31216		.25	4.38992	28	.75	4.45585	24
.80	4.31386		.30	4.39134		.80	4.45707	
.85	4.31555		.35	4.39276		.85	4.45829	
.90	4.31724		.40	4.39417		.90	4.45950	
.95	4.31892	33	.45	4.39558		.95	4.46071	
13.00	4.32059		.50	4.39698		18.00	4.46192	
.05	4.32226		.55	4.39838		.05	4.46313	
.10	4.32392		.60	4.39977		.10	4.46433	
.15	4.32558		.65	4.40116		.15	4.46553	
.20	4.32722		.70	4.40255		.20	4.46672	
.25	4.32887		.75	4.40393	27	.25	4.46791	
.30	4.33050		.80	4.40531		.30	4.46910	
.35	4.33213	32	.85	4.40668		.35	4.47029	
.40	4.33375		.90	4.40805		.40	4.47147	
.45	4.33537		.95	4.40941		.45	4.47265	23
.50	4.33698		16.00	4.41077		.50	4.47382	
.55	4.33859		.05	4.41213		.55	4.47499	
.60	4.34019		.10	4.41348		.60	4.47616	
.65	4.34178		.15	4.41482		.65	4.47733	
.70	4.34337		.20	4.41616		.70	4.47849	
.75	4.34495		.25	4.41750		.75	4.47965	
.80	4.34653	31	.30	4.41884		.80	4.48081	
.85	4.34810		.35	4.42017	26	.85	4.48196	
.90	4.34966		.40	4.42149		.90	4.48311	
.95	4.35122		.45	4.42282		.95	4.48426	

TABLE 30.—For *interconversion of miles and logarithms of meters*—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
19.00	4.48540	23	21.50	4.53909	20	24.00	4.58686	18
.05	4.48654		.55	4.54010		.05	4.58777	
.10	4.48768		.60	4.54110		.10	4.58867	
.15	4.48882		.65	4.54211		.15	4.58957	
.20	4.48995		.70	4.54311		.20	4.59047	
.25	4.49108	22	.75	4.54411	19	.25	4.59136	17
.30	4.49221		.80	4.54511		.30	4.59226	
.35	4.49333		.85	4.54610		.35	4.59315	
.40	4.49445		.90	4.54709		.40	4.59404	
.45	4.49557		.95	4.54808		.45	4.59493	
.50	4.49669	21	22.00	4.54907	18	.50	4.59582	16
.55	4.49780		.05	4.55006		.55	4.59670	
.60	4.49891		.10	4.55104		.60	4.59759	
.65	4.50001		.15	4.55202		.65	4.59847	
.70	4.50112		.20	4.55300		.70	4.59935	
.75	4.50222	20	.25	4.55398	17	.75	4.60023	15
.80	4.50332		.30	4.55495		.80	4.60110	
.85	4.50441		.35	4.55593		.85	4.60198	
.90	4.50550		.40	4.55690		.90	4.60285	
.95	4.50659		.45	4.55787		.95	4.60372	
20.00	4.50768	19	.50	4.55883	16	25.00	4.60459	14
.05	4.50876		.55	4.55980		.05	4.60546	
.10	4.50985		.60	4.56076		.10	4.60632	
.15	4.51093		.65	4.56172		.15	4.60719	
.20	4.51200		.70	4.56268		.20	4.60805	
.25	4.51308	18	.75	4.56363	15	.25	4.60891	13
.30	4.51415		.80	4.56459		.30	4.60977	
.35	4.51521		.85	4.56554		.35	4.61063	
.40	4.51628		.90	4.56649		.40	4.61148	
.45	4.51734		.95	4.56743		.45	4.61234	
.50	4.51840	17	23.00	4.56838	14	.50	4.61319	12
.55	4.51946		.05	4.56932		.55	4.61404	
.60	4.52052		.10	4.57026		.60	4.61489	
.65	4.52157		.15	4.57120		.65	4.61574	
.70	4.52262		.20	4.57214		.70	4.61658	
.75	4.52367	16	.25	4.57307	13	.75	4.61743	11
.80	4.52471		.30	4.57401		.80	4.61827	
.85	4.52576		.35	4.57494		.85	4.61911	
.90	4.52680		.40	4.57587		.90	4.61995	
.95	4.52783		.45	4.57679		.95	4.62079	
21.00	4.52887	15	.50	4.57772	12	26.00	4.62162	10
.05	4.52990		.55	4.57864		.05	4.62246	
.10	4.53093		.60	4.57956		.10	4.62329	
.15	4.53196		.65	4.58048		.15	4.62412	
.20	4.53299		.70	4.58140		.20	4.62495	
.25	4.53401	14	.75	4.58231	11	.25	4.62578	9
.30	4.53503		.80	4.58323		.30	4.62661	
.35	4.53605		.85	4.58414		.35	4.62743	
.40	4.53706		.90	4.58505		.40	4.62825	
.45	4.53808		.95	4.58596		.45	4.62908	

TABLE 30 — *For interconversion of miles and logarithms of meters*—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
26.50	4.62990	16	29.00	4.66905	15	31.50	4.70496	14
.55	4.63071		.05	4.66980		.55	4.70565	
.60	4.63153		.10	4.67054		.60	4.70634	
.65	4.63235		.15	4.67129		.65	4.70702	
.70	4.63316		.20	4.67203		.70	4.70771	
.75	4.63397		.25	4.67278		.75	4.70839	
.80	4.63479		.30	4.67352		.80	4.70908	
.85	4.63559		.35	4.67426		.85	4.70976	
.90	4.63640		.40	4.67500		.90	4.71044	
.95	4.63721		.45	4.67573		.95	4.71112	
27.00	4.63801		.50	4.67647		32.00	4.71180	13
.05	4.63882		.55	4.67721		.05	4.71248	
.10	4.63962		.60	4.67794		.10	4.71315	
.15	4.64042		.65	4.67867		.15	4.71383	
.20	4.64122		.70	4.67941		.20	4.71451	
.25	4.64202		.75	4.68014		.25	4.71518	
.30	4.64281		.80	4.68087		.30	4.71585	
.35	4.64361		.85	4.68159		.35	4.71652	
.40	4.64440		.90	4.68232		.40	4.71719	
.45	4.64519		.95	4.68305		.45	4.71787	
.50	4.64598		30.00	4.68377	14	.50	4.71853	
.55	4.64677		.05	4.68449		.55	4.71920	
.60	4.64756		.10	4.68522		.60	4.71987	
.65	4.64835		.15	4.68594		.65	4.72053	
.70	4.64913		.20	4.68666		.70	4.72120	
.75	4.64991		.25	4.68737		.75	4.72186	
.80	4.65069		.30	4.68809		.80	4.72252	
.85	4.65147		.35	4.68881		.85	4.72319	
.90	4.65225		.40	4.68952		.90	4.72385	
.95	4.65303		.45	4.69024		.95	4.72451	
28.00	4.65381	15	.50	4.69095		33.00	4.72516	
.05	4.65458		.55	4.69166		.05	4.72582	
.10	4.65536		.60	4.69237		.10	4.72648	
.15	4.65613		.65	4.69308		.15	4.72713	
.20	4.65690		.70	4.69379		.20	4.72779	
.25	4.65767		.75	4.69449		.25	4.72844	
.30	4.65844		.80	4.69520		.30	4.72909	
.35	4.65920		.85	4.69590		.35	4.72975	
.40	4.65997		.90	4.69661		.40	4.73040	
.45	4.66073		.95	4.69731		.45	4.73105	
.50	4.66149		31.00	4.69801		.50	4.73169	
.55	4.66226		.05	4.69871		.55	4.73234	
.60	4.66302		.10	4.69941		.60	4.73299	
.65	4.66377		.15	4.70011		.65	4.73363	
.70	4.66453		.20	4.70081		.70	4.73428	
.75	4.66529		.25	4.70150		.75	4.73492	
.80	4.66604		.30	4.70219		.80	4.73557	
.85	4.66680		.35	4.70289		.85	4.73621	
.90	4.66755		.40	4.70358		.90	4.73685	
.95	4.66830		.45	4.70427		.95	4.73749	



TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
34.00	4.73813	13	36.50	4.76894	12	39.00	4.79771	11
.05	4.73877		.55	4.76954		.05	4.79727	
.10	4.73940		.60	4.77013		.10	4.79883	
.15	4.74004		.65	4.77072		.15	4.79938	
.20	4.74068		.70	4.77132		.20	4.79994	
.25	4.74131		.75	4.77191		.25	4.80049	
.30	4.74194		.80	4.77250		.30	4.80104	
.35	4.74258		.85	4.77309		.35	4.80159	
.40	4.74321		.90	4.77368		.40	4.80215	
.45	4.74384		.95	4.77426		.45	4.80270	
.50	4.74447	12	37.00	4.77485		.50	4.80325	
.55	4.74510		.05	4.77544		.55	4.80380	
.60	4.74573		.10	4.77602		.60	4.80435	
.65	4.74635		.15	4.77661		.65	4.80489	
.70	4.74698		.20	4.77719		.70	4.80544	
.75	4.74761		.25	4.77778		.75	4.80599	
.80	4.74823		.30	4.77836		.80	4.80653	
.85	4.74885		.35	4.77894		.85	4.80708	
.90	4.74947		.40	4.77952		.90	4.80762	
.95	4.75010		.45	4.78010		.95	4.80817	
35.00	4.75072		.50	4.78068		40.00	4.80871	
.05	4.75134		.55	4.78126		.05	4.80925	
.10	4.75196		.60	4.78184		.10	4.80979	
.15	4.75257		.65	4.78241		.15	4.81034	
.20	4.75319		.70	4.78299		.20	4.81088	
.25	4.75381		.75	4.78357		.25	4.81142	
.30	4.75443		.80	4.78414		.30	4.81195	
.35	4.75504		.85	4.78472		.35	4.81249	
.40	4.75565		.90	4.78529		.40	4.81303	
.45	4.75627		.95	4.78586		.45	4.81357	
.50	4.75688		38.00	4.78643	11	.50	4.81411	
.55	4.75749		.05	4.78701		.55	4.81464	
.60	4.75810		.10	4.78758		.60	4.81518	
.65	4.75871		.15	4.78815		.65	4.81571	
.70	4.75932		.20	4.78871		.70	4.81624	
.75	4.75993		.25	4.78928		.75	4.81677	
.80	4.76053		.30	4.78985		.80	4.81731	
.85	4.76114		.35	4.79041		.85	4.81784	
.90	4.76174		.40	4.79098		.90	4.81837	
.95	4.76235		.45	4.79155		.95	4.81890	
36.00	4.76295		.50	4.79211		41.00	4.81943	
.05	4.76355		.55	4.79267		.05	4.81996	
.10	4.76416		.60	4.79324		.10	4.82049	
.15	4.76476		.65	4.79380		.15	4.82102	
.20	4.76536		.70	4.79436		.20	4.82155	
.25	4.76596		.75	4.79592		.25	4.82207	
.30	4.76656		.80	4.79548		.30	4.82260	
.35	4.76715		.85	4.79604		.35	4.82313	
.40	4.76775		.90	4.79660		.40	4.82365	
.45	4.76835		.95	4.79716		.45	4.82417	

TABLE 30.—For *interconversion of miles and logarithms of meters*—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
41.50	4.82470	10	44.00	4.85010	10	46.50	4.87410	9
.55	4.82522		.05	4.85060		.55	4.87457	
.60	4.82574		.10	4.85109		.60	4.87504	
.65	4.82627		.15	4.85158		.65	4.87550	
.70	4.82679		.20	4.85207		.70	4.87597	
.75	4.82731		.25	4.85256		.75	4.87643	
.80	4.82783		.30	4.85305		.80	4.87690	
.85	4.82835		.35	4.85354		.85	4.87736	
.90	4.82886		.40	4.85403		.90	4.87782	
.95	4.82938		.45	4.85452		.95	4.87829	
42.00	4.82990		.50	4.85501		47.00	4.87875	
.05	4.83042		.55	4.85550		.05	4.87921	
.10	4.83093		.60	4.85599		.10	4.87967	
.15	4.83145		.65	4.85647		.15	4.88013	
.20	4.83196		.70	4.85696		.20	4.88059	
.25	4.83248		.75	4.85744		.25	4.88105	
.30	4.83299		.80	4.85793		.30	4.88151	
.35	4.83350		.85	4.85841		.35	4.88197	
.40	4.83402		.90	4.85890		.40	4.88243	
.45	4.83453		.95	4.85938		.45	4.88289	
.50	4.83504		45.00	4.85986		.50	4.88334	
.55	4.83555		.05	4.86035		.55	4.88380	
.60	4.83606		.10	4.86083		.60	4.88326	
.65	4.83657		.15	4.86131		.65	4.88471	
.70	4.83708		.20	4.86179		.70	4.88517	
.75	4.83759		.25	4.86227		.75	4.88562	
.80	4.83809		.30	4.86275		.80	4.88608	
.85	4.83860		.35	4.86323		.85	4.88653	
.90	4.83911		.40	4.86371		.90	4.88699	
.95	4.83961		.45	4.86418		.95	4.88744	
43.00	4.84012		.50	4.86466		48.00	4.88789	
.05	4.84062		.55	4.86514		.05	4.88834	
.10	4.84113		.60	4.86561		.10	4.88879	
.15	4.84163		.65	4.86609		.15	4.88925	
.20	4.84213		.70	4.86657		.20	4.88970	
.25	4.84264		.75	4.86704		.25	4.89015	
.30	4.84314		.80	4.86751		.30	4.89060	
.35	4.84364		.85	4.86799		.35	4.89105	
.40	4.84414		.90	4.86846		.40	4.89149	
.45	4.84464		.95	4.86894		.45	4.89194	
.50	4.84514		46.00	4.86941	9	.50	4.89239	
.55	4.84564		.05	4.86988		.55	4.89284	
.60	4.84614		.10	4.87035		.60	4.89329	
.65	4.84663		.15	4.87082		.65	4.89373	
.70	4.84713		.20	4.87129		.70	4.89418	
.75	4.84763		.25	4.87176		.75	4.89462	
.80	4.84812		.30	4.87223		.80	4.89507	
.85	4.84862		.35	4.87270		.85	4.89551	
.90	4.84911		.40	4.87317		.90	4.89596	
.95	4.84961		.45	4.87364		.95	4.89640	

TABLE 30.—*For interconversion of miles and logarithms of meters*—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
49.00	4.89685	9	51.50	4.91846	8	54.00	4.93904	8
.05	4.89729		.55	4.91888		.05	4.93945	
.10	4.89773		.60	4.91930		.10	4.93985	
.15	4.89817		.65	4.91972		.15	4.94025	
.20	4.89861		.70	4.92014		.20	4.94065	
.25	4.89906		.75	4.92056		.25	4.94105	
.30	4.89950		.80	4.92098		.30	4.94145	
.35	4.89994		.85	4.92140		.35	4.94185	
.40	4.90038		.90	4.92182		.40	4.94225	
.45	4.90082		.95	4.92224		.45	4.94265	
.50	4.90125		52.00	4.92265		.50	4.94305	
.55	4.90169		.05	4.92307		.55	4.94345	
.60	4.90213		.10	4.92349		.60	4.94384	
.65	4.90257		.15	4.92390		.65	4.94424	
.70	4.90301		.20	4.92432		.70	4.94464	
.75	4.90344		.25	4.92474		.75	4.94503	
.80	4.90388		.30	4.92515		.80	4.94543	
.85	4.90431		.35	4.92557		.85	4.94583	
.90	4.90475		.40	4.92598		.90	4.94622	
.95	4.90519		.45	4.92639		.95	4.94662	
50.00	4.90562	9	.50	4.92681	8	55.00	4.94701	8
.05	4.90605		.55	4.92722		.05	4.94741	
.10	4.90649		.60	4.92764		.10	4.94780	
.15	4.90692		.65	4.92805		.15	4.94820	
.20	4.90735		.70	4.92846		.20	4.94859	
.25	4.90779		.75	4.92887		.25	4.94898	
.30	4.90822		.80	4.92928		.30	4.94937	
.35	4.90865		.85	4.92969		.35	4.94977	
.40	4.90908		.90	4.93011		.40	4.95016	
.45	4.90951		.95	4.93052		.45	4.95055	
.50	4.90994		53.00	4.93093		.50	4.95094	
.55	4.91037		.05	4.93133		.55	4.95133	
.60	4.91080		.10	4.93175		.60	4.95172	
.65	4.91123		.15	4.93215		.65	4.95212	
.70	4.91166		.20	4.93256		.70	4.95251	
.75	4.91209		.25	4.93297		.75	4.95289	
.80	4.91251		.30	4.93338		.80	4.95328	
.85	4.91294		.35	4.93378		.85	4.95367	
.90	4.91337		.40	4.93419		.90	4.95406	
.95	4.91379		.45	4.93460		.95	4.95445	
51.00	4.91422	8	.50	4.93500	8	56.00	4.95484	8
.05	4.91465		.55	4.93541		.05	4.95523	
.10	4.91507		.60	4.93581		.10	4.95561	
.15	4.91550		.65	4.93622		.15	4.95600	
.20	4.91592		.70	4.93662		.20	4.95639	
.25	4.91634		.75	4.93703		.25	4.95677	
.30	4.91677		.80	4.93743		.30	4.95716	
.35	4.91719		.85	4.93784		.35	4.95754	
.40	4.91761		.90	4.93824		.40	4.95793	
.45	4.91803		.95	4.93864		.45	4.95831	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
56.50	4.95870	8	59.00	4.97750	7	61.50	4.99553	7
.55	4.95908		.05	4.97787		.55	4.99588	
.60	4.95947		.10	4.97824		.60	4.99623	
.65	4.95985		.15	4.97861		.65	4.99658	
.70	4.96023		.20	4.97897		.70	4.99693	
.75	4.96062		.25	4.97934		.75	4.99729	
.80	4.96100		.30	4.97971		.80	4.99764	
.85	4.96138		.35	4.98007		.85	4.99799	
.90	4.96176		.40	4.98044		.90	4.99834	
.95	4.96214		.45	4.98080		.95	4.99869	
57.00	4.96253		.50	4.98117		62.00	4.99904	
.05	4.96291		.55	4.98153		.05	4.99939	
.10	4.96329		.60	4.98190		.10	4.99974	
.15	4.96367		.65	4.98226		.15	5.00009	
.20	4.96405		.70	4.98262		.20	5.00044	
.25	4.96443		.75	4.98299		.25	5.00079	
.30	4.96481		.80	4.98335		.30	5.00114	
.35	4.96518		.85	4.98371		.35	5.00149	
.40	4.96556		.90	4.98408		.40	5.00183	
.45	4.96594		.95	4.98444		.45	5.00218	
.50	4.96632	7	60.00	4.98480		.50	5.00253	
.55	4.96669		.05	4.98516		.55	5.00288	
.60	4.96707		.10	4.98552		.60	5.00322	
.65	4.96745		.15	4.98589		.65	5.00357	
.70	4.96783		.20	4.98625		.70	5.00392	
.75	4.96820		.25	4.98661		.75	5.00426	
.80	4.96858		.30	4.98697		.80	5.00461	
.85	4.96895		.35	4.98733		.85	5.00495	
.90	4.96933		.40	4.98769		.90	5.00530	
.95	4.96970		.45	4.98805		.95	5.00565	
58.00	4.97008		.50	4.98841		63.00	5.00599	
.05	4.97045		.55	4.98876		.05	5.00633	
.10	4.97083		.60	4.98912		.10	5.00668	
.15	4.97120		.65	4.98948		.15	5.00702	
.20	4.97157		.70	4.98984		.20	5.00737	
.25	4.97195		.75	4.99020		.25	5.00771	
.30	4.97232		.80	4.99055		.30	5.00805	
.35	4.97269		.85	4.99091		.35	5.00840	
.40	4.97306		.90	4.99127		.40	5.00874	
.45	4.97343		.95	4.99162		.45	5.00908	
.50	4.97381		61.00	4.99198		.50	5.00942	
.55	4.97418		.05	4.99234		.55	5.00977	
.60	4.97455		.10	4.99269		.60	5.01011	
.65	4.97492		.15	4.99305		.65	5.01045	
.70	4.97529		.20	4.99340		.70	5.01079	
.75	4.97566		.25	4.99376		.75	5.01113	
.80	4.97603		.30	4.99411		.80	5.01147	
.85	4.97640		.35	4.99447		.85	5.01181	
.90	4.97677		.40	4.99482		.90	5.01215	
.95	4.97713		.45	4.99517		.95	5.01249	

TABLE 30.—For interconversion of miles and logarithms of meters.—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
64.00	5.01283	7	66.50	5.02947	7	69.00	5.04550	6
.05	5.01317		.55	5.02980		.05	5.04581	
.10	5.01351		.60	5.03012		.10	5.04613	
.15	5.01385		.65	5.03045		.15	5.04644	
.20	5.01419		.70	5.03078		.20	5.04676	
.25	5.01452		.75	5.03110		.25	5.04707	
.30	5.01486		.80	5.03143		.30	5.04738	
.35	5.01520		.85	5.03175		.35	5.04770	
.40	5.01554		.90	5.03208		.40	5.04801	
.45	5.01587		.95	5.03241		.45	5.04832	
.50	5.01621	6	67.00	5.03273	6	.50	5.04863	
.55	5.01655		.05	5.03305		.55	5.04895	
.60	5.01688		.10	5.03337		.60	5.04926	
.65	5.01722		.15	5.03370		.65	5.04957	
.70	5.01755		.20	5.03402		.70	5.04988	
.75	5.01789		.25	5.03434		.75	5.05019	
.80	5.01823		.30	5.03467		.80	5.05051	
.85	5.01856		.35	5.03499		.85	5.05082	
.90	5.01889		.40	5.03531		.90	5.05113	
.95	5.01923		.45	5.03563		.95	5.05144	
65.00	5.01956		.50	5.03595		70.00	5.05175	
.05	5.01990		.55	5.03627		.05	5.05206	
.10	5.02023		.60	5.03660		.10	5.05237	
.15	5.02056		.65	5.03692		.15	5.05268	
.20	5.02090		.70	5.03724		.20	5.05299	
.25	5.02123		.75	5.03756		.25	5.05330	
.30	5.02156		.80	5.03788		.30	5.05361	
.35	5.02190		.85	5.03820		.35	5.05391	
.40	5.02223		.90	5.03852		.40	5.05422	
.45	5.02256		.95	5.03884		.45	5.05453	
.50	5.02289		68.00	5.03916		.50	5.05484	
.55	5.02322		.05	5.03948		.55	5.05515	
.60	5.02355		.10	5.03980		.60	5.05545	
.65	5.02389		.15	5.04012		.65	5.05576	
.70	5.02421		.20	5.04043		.70	5.05607	
.75	5.02455		.25	5.04075		.75	5.05538	
.80	5.02488		.30	5.04107		.80	5.05568	
.85	5.02521		.35	5.04139		.85	5.05599	
.90	5.02554		.40	5.04171		.90	5.05730	
.95	5.02587		.45	5.04202		.95	5.05760	
66.00	5.02619		.50	5.04234		71.00	5.05791	
.05	5.02652		.55	5.04266		.05	5.05821	
.10	5.02685		.60	5.04297		.10	5.05852	
.15	5.02718		.65	5.04329		.15	5.05883	
.20	5.02751		.70	5.04361		.20	5.05913	
.25	5.02784		.75	5.04392		.25	5.05943	
.30	5.02816		.80	5.04424		.30	5.05974	
.35	5.02849		.85	5.04455		.35	5.06004	
.40	5.02882		.90	5.04487		.40	5.06035	
.45	5.02915		.95	5.04518		.45	5.06065	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
71.50	5.06096	6	74.00	5.07588	6	76.50	5.09031	6
.55	5.06126		.05	5.07617		.55	5.09059	
.60	5.06156		.10	5.07647		.60	5.09088	
.65	5.06187		.15	5.07676		.65	5.09117	
.70	5.06217		.20	5.07705		.70	5.09145	
.75	5.06247		.25	5.07735		.75	5.09173	
.80	5.06277		.30	5.07764		.80	5.09201	
.85	5.06308		.35	5.07793		.85	5.09229	
.90	5.06338		.40	5.07822		.90	5.09258	
.95	5.06368		.45	5.07851		.95	5.09286	
72.00	5.06398		.50	5.07881		77.00	5.09314	
.05	5.06428		.55	5.07910		.05	5.09342	
.10	5.06459		.60	5.07939		.10	5.09370	
.15	5.06489		.65	5.07968		.15	5.09399	
.20	5.06519		.70	5.07997		.20	5.09427	
.25	5.06549		.75	5.08026		.25	5.09455	
.30	5.06579		.80	5.08055		.30	5.09483	
.35	5.06609		.85	5.08084		.35	5.09511	
.40	5.06639		.90	5.08113		.40	5.09539	
.45	5.06669		.95	5.08142		.45	5.09567	
.50	5.06699		75.00	5.08171		.50	5.09595	
.55	5.06729		.05	5.08200		.55	5.09623	
.60	5.06759		.10	5.08229		.60	5.09651	
.65	5.06789		.15	5.08258		.65	5.09679	
.70	5.06818		.20	5.08287		.70	5.09707	
.75	5.06848		.25	5.08316		.75	5.09735	
.80	5.06878		.30	5.08345		.80	5.09763	
.85	5.06908		.35	5.08373		.85	5.09791	
.90	5.06938		.40	5.08402		.90	5.09819	
.95	5.06967		.45	5.08431		.95	5.09847	
73.00	5.06997		.50	5.08460		78.00	5.09875	
.05	5.07027		.55	5.08488		.05	5.09902	
.10	5.07057		.60	5.08517		.10	5.09930	
.15	5.07086		.65	5.08546		.15	5.09958	
.20	5.07116		.70	5.08575		.20	5.09986	
.25	5.07146		.75	5.08603		.25	5.10013	
.30	5.07175		.80	5.08632		.30	5.10041	
.35	5.07205		.85	5.08661		.35	5.10069	
.40	5.07235		.90	5.08689		.40	5.10097	
.45	5.07264		.95	5.08718		.45	5.10124	
.50	5.07294		76.00	5.08746		.50	5.10152	
.55	5.07323		.05	5.08775		.55	5.10180	
.60	5.07353		.10	5.08803		.60	5.10207	
.65	5.07382		.15	5.08832		.65	5.10235	
.70	5.07412		.20	5.08861		.70	5.10263	
.75	5.07441		.25	5.08889		.75	5.10290	
.80	5.07471		.30	5.08917		.80	5.10318	
.85	5.07500		.35	5.08946		.85	5.10345	
.90	5.07529		.40	5.08974		.90	5.10373	
.95	5.07559		.45	5.09003		.95	5.10400	

TABLE 30.—For *interconversion of miles and logarithms of meters*—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
79.00	5.10428	5	81.50	5.11781	5	84.00	5.13093	5
.05	5.10455		.55	5.11807		.05	5.13119	
.10	5.10483		.60	5.11834		.10	5.13145	
.15	5.10510		.65	5.11861		.15	5.13170	
.20	5.10537		.70	5.11887		.20	5.13196	
.25	5.10565		.75	5.11913		.25	5.13222	
.30	5.10592		.80	5.11940		.30	5.13248	
.35	5.10620		.85	5.11967		.35	5.13273	
.40	5.10647		.90	5.11993		.40	5.13299	
.45	5.10674		.95	5.12020		.45	5.13325	
.50	5.10702		82.00	5.12046		.50	5.13351	
.55	5.10729		.05	5.12073		.55	5.13376	
.60	5.10756		.10	5.12099		.60	5.13402	
.65	5.10784		.15	5.12126		.65	5.13428	
.70	5.10811		.20	5.12152		.70	5.13453	
.75	5.10838		.25	5.12179		.75	5.13479	
.80	5.10865		.30	5.12205		.80	5.13505	
.85	5.10893		.35	5.12231		.85	5.13530	
.90	5.10920		.40	5.12258		.90	5.13556	
.95	5.10947		.45	5.12284		.95	5.13581	
80.00	5.10974		.50	5.12310		85.00	5.13607	
.05	5.11001		.55	5.12337		.05	5.13632	
.10	5.11028		.60	5.12363		.10	5.13658	
.15	5.11055		.65	5.12389		.15	5.13683	
.20	5.11082		.70	5.12416		.20	5.13709	
.25	5.11109		.75	5.12442		.25	5.13734	
.30	5.11137		.80	5.12468		.30	5.13760	
.35	5.11164		.85	5.12494		.35	5.13785	
.40	5.11191		.90	5.12521		.40	5.13811	
.45	5.11218		.95	5.12547		.45	5.13836	
.50	5.11245		83.00	5.12573		.50	5.13862	
.55	5.11272		.05	5.12599		.55	5.13887	
.60	5.11299		.10	5.12625		.60	5.13912	
.65	5.11325		.15	5.12651		.65	5.13938	
.70	5.11352		.20	5.12677		.70	5.13963	
.75	5.11379		.25	5.12703		.75	5.13988	
.80	5.11406		.30	5.12729		.80	5.14014	
.85	5.11433		.35	5.12756		.85	5.14039	
.90	5.11460		.40	5.12782		.90	5.14064	
.95	5.11487		.45	5.12808		.95	5.14090	
81.00	5.11513		.50	5.12834		86.00	5.14115	
.05	5.11540		.55	5.12860		.05	5.14140	
.10	5.11567		.60	5.12886		.10	5.14165	
.15	5.11594		.65	5.12912		.15	5.14191	
.20	5.11621		.70	5.12937		.20	5.14216	
.25	5.11647		.75	5.12963		.25	5.14241	
.30	5.11674		.80	5.12989		.30	5.14266	
.35	5.11701		.85	5.13015		.35	5.14291	
.40	5.11727		.90	5.13041		.40	5.14316	
.45	5.11754		.95	5.13067		.45	5.14341	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
86.50	5.14367	5	89.00	5.15604	5	91.50	5.16807	5
.55	5.14392		.05	5.15628		.55	5.16831	
.60	5.14417		.10	5.15653		.60	5.16855	
.65	5.14442		.15	5.15677		.65	5.16878	
.70	5.14467		.20	5.15701		.70	5.16902	
.75	5.14492		.25	5.15726		.75	5.16926	
.80	5.14517		.30	5.15750		.80	5.16949	
.85	5.14542		.35	5.15775		.85	5.16973	
.90	5.14567		.40	5.15799		.90	5.16997	
.95	5.14592		.45	5.15823		.95	5.17020	
87.00	5.14617		.50	5.15847		92.00	5.17044	
.05	5.14642		.55	5.15872		.05	5.17067	
.10	5.14667		.60	5.15896		.10	5.17091	
.15	5.14692		.65	5.15920		.15	5.17115	
.20	5.14717		.70	5.15944		.20	5.17138	
.25	5.14741		.75	5.15968		.25	5.17162	
.30	5.14766		.80	5.15993		.30	5.17285	
.35	5.14791		.85	5.16017		.35	5.17209	
.40	5.14816		.90	5.16041		.40	5.17232	
.45	5.14841		.95	5.16065		.45	5.17256	
.50	5.14866		90.00	5.16089		.50	5.17279	
.55	5.14891		.05	5.16113		.55	5.17303	
.60	5.14915		.10	5.16137		.60	5.17326	
.65	5.14940		.15	5.16162		.65	5.17349	
.70	5.14965		.20	5.16186		.70	5.17373	
.75	5.14990		.25	5.16210		.75	5.17396	
.80	5.15014		.30	5.16234		.80	5.17420	
.85	5.15039		.35	5.16258		.85	5.17443	
.90	5.15064		.40	5.16282		.90	5.17467	
.95	5.15089		.45	5.16306		.95	5.17490	
88.00	5.15113		.50	5.16330		93.00	5.17513	
.05	5.15138		.55	5.16354		.05	5.17537	
.10	5.15163		.60	5.16378		.10	5.17560	
.15	5.15187		.65	5.16402		.15	5.17583	
.20	5.15212		.70	5.16426		.20	5.17607	
.25	5.15237		.75	5.16450		.25	5.17630	
.30	5.15261		.80	5.16474		.30	5.17653	
.35	5.15286		.85	5.16497		.35	5.17676	
.40	5.15310		.90	5.16521		.40	5.17700	
.45	5.15335		.95	5.16545		.45	5.17723	
.50	5.15359		91.00	5.16569		.50	5.17746	
.55	5.15384		.05	5.16593		.55	5.17769	
.60	5.15408		.10	5.16617		.60	5.17793	
.65	5.15433		.15	5.16641		.65	5.17816	
.70	5.15457		.20	5.16665		.70	5.17839	
.75	5.15482		.25	5.16688		.75	5.17862	
.80	5.15506		.30	5.16712		.80	5.17885	
.85	5.15531		.35	5.16736		.85	5.17908	
.90	5.15555		.40	5.16760		.90	5.17932	
.95	5.15580		.45	5.16783		.95	5.17955	



TABLE 30.—For *interconversion* of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
94.00	5.17978	5	96.00	5.18892	5	98.00	5.19788	4
.05	5.18001		.05	5.18915		.05	5.19810	
.10	5.18024		.10	5.18937		.10	5.19832	
.15	5.18047		.15	5.18960		.15	5.19854	
.20	5.18170		.20	5.18983		.20	5.19876	
.25	5.18193		.25	5.19005		.25	5.19898	
.30	5.18116		.30	5.19028		.30	5.19920	
.35	5.18139		.35	5.19050		.35	5.19942	
.40	5.18162		.40	5.19073		.40	5.19965	
.45	5.18185		.45	5.19095		.45	5.19987	
.50	5.18208		.50	5.19118		.50	5.20009	
.55	5.18231		.55	5.19140		.55	5.20031	
.60	5.18254		.60	5.19163		.60	5.20053	
.65	5.18277		.65	5.19185		.65	5.20075	
.70	5.18300		.70	5.19208		.70	5.20097	
.75	5.18323		.75	5.19230		.75	5.20119	
.80	5.18346		.80	5.19253		.80	5.20141	
.85	5.18369		.85	5.19275		.85	5.20163	
.90	5.18392		.90	5.19297		.90	5.20185	
.95	5.18415		.95	5.19320		.95	5.20207	
95.00	5.18437		97.00	5.19342	4	99.00	5.20229	
.05	5.18460		.05	5.19365		.05	5.20250	
.10	5.18483		.10	5.19387		.10	5.20272	
.15	5.18506		.15	5.19409		.15	5.20294	
.20	5.18529		.20	5.19432		.20	5.20316	
.25	5.18551		.25	5.19454		.25	5.20338	
.30	5.18574		.30	5.19476		.30	5.20360	
.35	5.18597		.35	5.19499		.35	5.20382	
.40	5.18620		.40	5.19521		.40	5.20404	
.45	5.18643		.45	5.19543		.45	5.20425	
.50	5.18665		.50	5.19565		.50	5.20447	
.55	5.18688		.55	5.19588		.55	5.20469	
.60	5.18711		.60	5.19610		.60	5.20491	
.65	5.18733		.65	5.19632		.65	5.20513	
.70	5.18756		.70	5.19655		.70	5.20535	
.75	5.18779		.75	5.19677		.75	5.20556	
.80	5.18802		.80	5.19699		.80	5.20578	
.85	5.18824		.85	5.19721		.85	5.20600	
.90	5.18847		.90	5.19743		.90	5.20621	
.95	5.18869		.95	5.19765		.95	5.20643	

## CONVENIENT EQUIVALENTS.

1 acre = 209 feet square, nearly.

1 acre = 43,560 square feet = 4,840 square yards.

1 statute mile = 1,760 yards = 5,280 feet = 63,360 inches.

1 cubic foot = 7.48 gallons = 0.804 bushel.

1 cubic foot of water weighs 62.4 pounds.

1 wine gallon = 8.34 pounds water.

1 wine gallon = 231 cubic inches.

1 avoirdupois pound = 7,000 grains.

1 troy pound = 5,760 grains.

- 1 meter = 39.37 inches. Log. 1.5951654.  
 1 meter = 3.28083 feet. Log. 0.5159842.  
 1 meter = 1.093611 yards. Log. 0.0388629.  
 1 meter = 0.00062137 mile. Log. 6.7933502.  
 1 kilometer = 3,281 feet = five-eighths mile, nearly.  
 1 cubic meter = 35.314 cubic feet = 1.308 yards.  
 1 liter = 1.0567 quarts.  
 1 gram = 15.43 grains.  
 1 kilogram = 2.2046 avoirdupois pounds.  
 1 tonneau (metric ton) = 2,204.6 pounds.  
 1 cubic meter per minute = 0.5886 second-foot.  
 1 second-foot = 50 California miner's inches.  
 1 second-foot = 40 Arizona miner's inches.  
 1 second-foot = 449 gallons per minute.  
 1 second-foot for one day = 1.9835 acre-feet.  
 1 second-foot for one day = 646,272 United States gallons.  
 1 second-foot = about one acre-inch per hour.  
 1 acre-foot = 325,850 gallons.  
 1,000,000 gallons = 3.07 acre-feet.  
 1,000,000 cubic feet = 22.95 acre-feet.  
 1,000,000 gallons per 24 hours = 1.55 second-feet.  
 1 horse power = 550 foot-pounds per second.  
 1 horse power = 76 kilogrammeters per second.  
 1 horse power = 746 watts.  
 1 horse power = 1 second-foot water falling 8.8 feet.  
 1 second-foot falling 10 feet = 1.135 horse power.  
 1 foot per second = 1.077 kilometers per hour.  
 1 foot per second = 0.68 miles per hour.  
 1 inch = 2.54 centimeters.  
 1 foot = 0.3048 meters.  
 1 yard = 0.9144 meters.  
 1 mile = 1.60935 kilometers.  
 1 square yard = 0.836 square meters.  
 1 acre = 0.4047 hectares.  
 1 square mile = 259 hectares.  
 1 square mile = 2.59 square kilometers.  
 1 cubic foot = 0.0283 cubic meters.  
 1 cubic yard = 0.7646 cubic meters.  
 1 gallon = 3.7854 liters.  
 1 pound = 0.4536 kilograms.  
 1 atmosphere = about  $\begin{cases} 15 \text{ pounds per square inch.} \\ 1 \text{ ton per square foot.} \\ 1 \text{ kilo per square centimeter.} \end{cases}$

Acceleration of gravity = 32.16 feet per second.

To change miles to inches on map:

- Scale 1:125000, 1 mile = 0.50688 inches. Log. = 9.7049052.  
 Scale 1:90000, 1 mile = 0.70400 inches. Log. = 9.8475727.  
 Scale 1:62500, 1 mile = 1.01376 inches. Log. = 0.0059352.  
 Scale 1:45000, 1 mile = 1.40800 inches. Log. = 0.1486027.

To change log. of meters to log. of inches on map:

- Scale 1:125000 add 6.4982552.  
 Scale 1:90000 add 6.6409228.  
 Scale 1:62500 add 6.7992853.  
 Scale 1:45000 add 6.9419528.

CONSTANTS.

		Log.
Basis of natural logarithms.....	e = 2.7182818285	0.4342944819
Modulus of Briggs's logarithms.....	m = 0.4342944819	9.6377843113—10
Radius of the circle in seconds.....	r = 206264.8062	5.3144251332
Radius of the circle in minutes.....	r = 3437.74677	3.5362738828
Radius of the circle in degrees.....	r = 57.2957795	1.7581226324
Circumference of the circle in seconds.....	1296000	6.1126050015
Circumference of the circle in minutes.....	21600	4.3344537512
Circumference of the circle in degrees.....	360	2.5563025008
Circumference of the circle for the diameter. =	1	0.0000000000
	= 3.1415926536	0.4971498727

ASTRONOMICAL CONSTANTS (HARKNESS).

Sidereal year = 365.256 357 8 mean solar days.  
Sidereal day = 23<sup>h</sup> 56<sup>m</sup> 4.100 mean solar time.  
Mean solar day = 24<sup>h</sup> 3<sup>m</sup> 56.546 sidereal time.  
Mean distance of the earth from the sun = 92 800 000 miles.

PHYSICAL CONSTANTS.

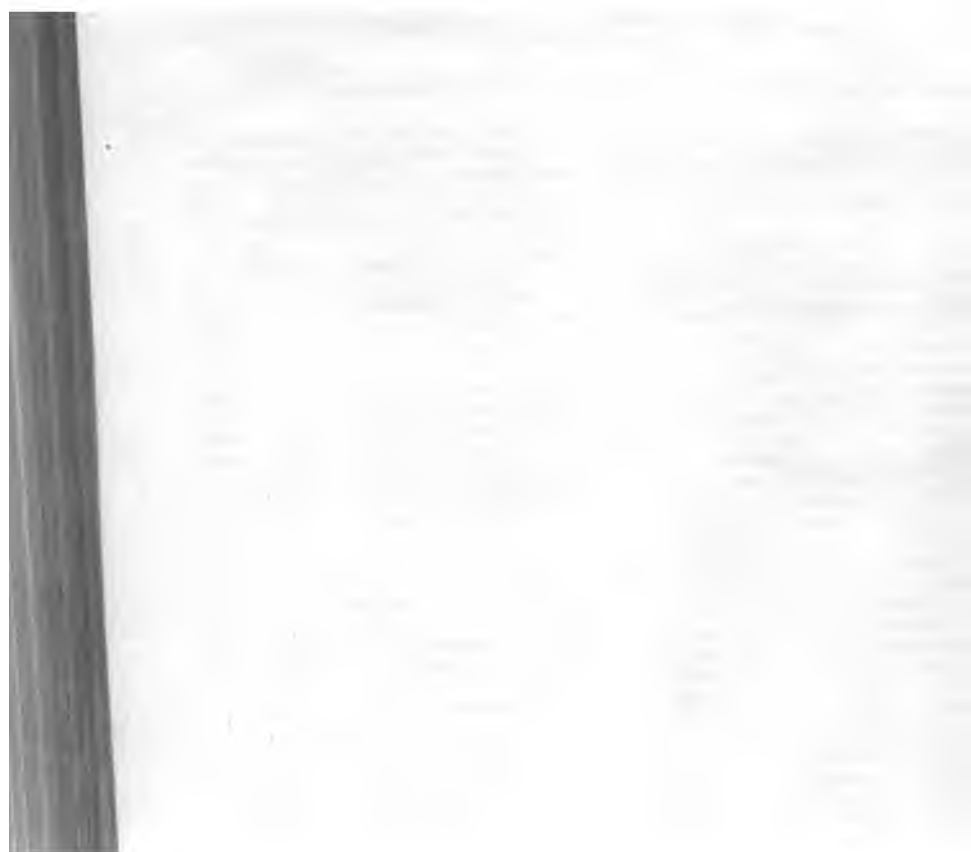
Velocity of light (Harkness) = 186 337 miles per second = 299 878 km. per second.  
Velocity of sound through dry air = 1090  $\sqrt{1+0.00367\ t^{\circ}\text{C.}}$  feet per second.

LINEAR EXPANSIONS OF PRINCIPAL METALS IN MICRONS PER METRE (OR MILLIONTHS PER UNIT LENGTH).

Name of metal.	Expansion per degree C.	Expansion per degree F.
Aluminum.....	20	11.1
Brass.....	19	10.5
Copper.....	17	9.4
Glass.....	9	5.0
Gold.....	15	8.3
Iron, cast.....	11	6.1
Iron, wrought.....	12	6.7
Lead.....	28	15.5
Nickel-steel.....	0	0.0
Platinum.....	9	5.0
Platinum-iridium.....	8.7	4.8
Silver.....	19	10.5
Steel, hard.....	12	6.7
Steel, soft.....	11	6.1
Tin.....	19	10.5
Zinc.....	29	16.1

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